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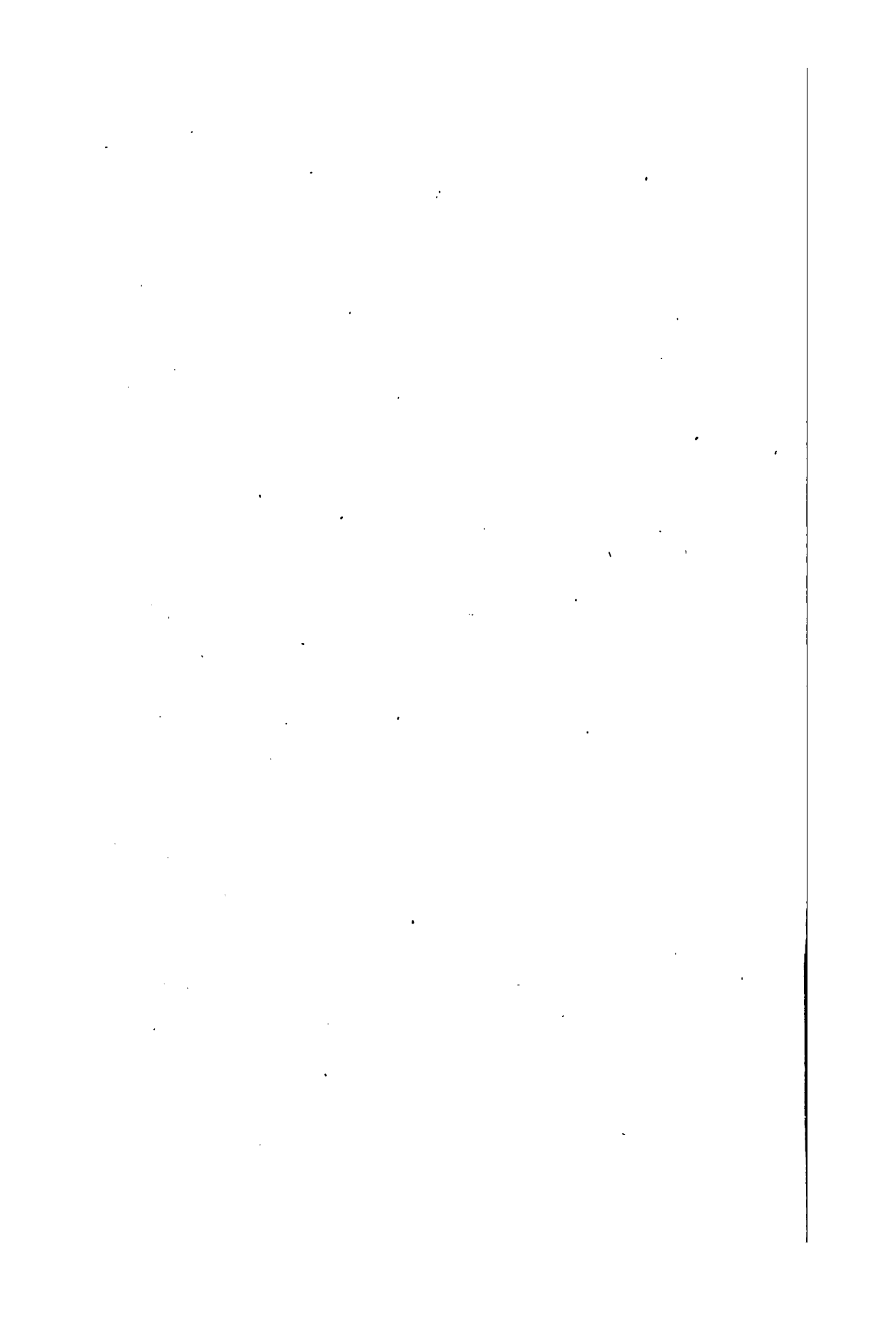
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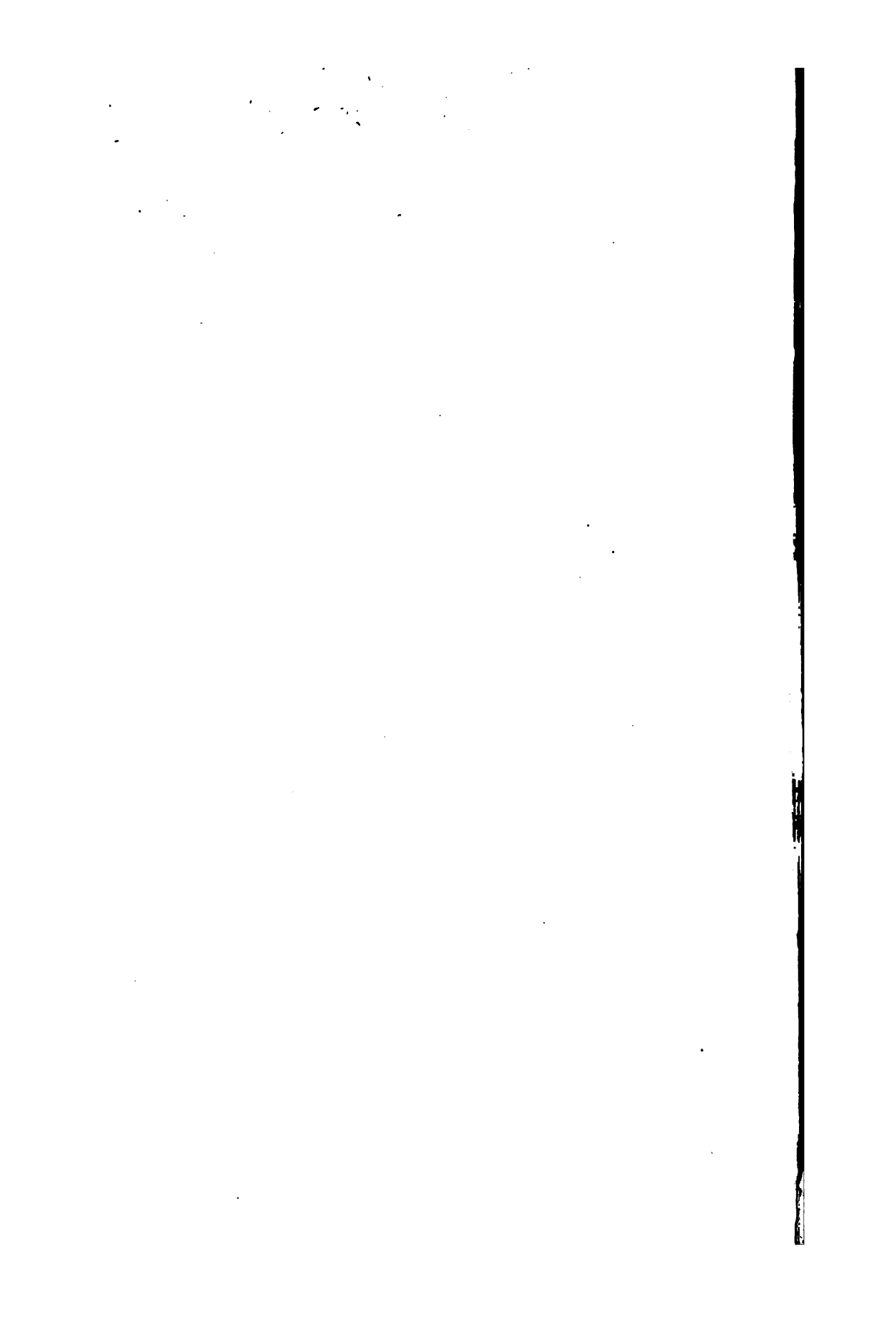


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DEPARTMENT OF THE INTERIOR
BUREAU OF EDUCATION
IN COOPERATION WITH THE UNITED STATES FOOD ADMINISTRATION

Lessons in Community and National Life

SERIES C, FOR THE INTERMEDIATE GRADES
OF THE ELEMENTARY SCHOOL

PREPARED UNDER THE DIRECTION OF

CHARLES H. JUDD

Director of the School of Education of the University of Chicago

and

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*Dean of the School of Commerce and Administration of the
University of Chicago*



WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

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Dec. 6, 1918.
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CONTENTS.

| | Page- |
|---|-------|
| Letter of the President..... | 5 |
| Introduction..... | 7 |
| CHAPTER I.—SOCIAL ORGANIZATION AND THE EFFECTS OF WAR. | |
| Lesson C—1. The war and aeroplanes. Harry O. Gillet, principal of the University Elementary School, and Dorothea Schmidt, school of commerce and administration, University of Chicago..... | 9 |
| Lesson C—2. Spinning and dyeing linen in Colonial times. R. M. Tryon, assistant professor of the teaching of history, University of Chicago..... | 17 |
| Lesson C—3. The water supply of a town or city. Grace E. Storm, teacher in the University of Chicago Elementary School..... | 25 |
| Lesson C—4. Petroleum and its uses. Edith P. Parker, teacher in the University of Chicago Elementary School..... | 33 |
| CHAPTER II.—PRODUCTION AND WISE CONSUMPTION. | |
| Lesson C—5. Conservation as exemplified by irrigation projects. Charles A. McMurray, professor at the George Peabody College for Teachers..... | 41 |
| Lesson C—6. Checking waste in the production and use of coal. Edith P. Parker..... | 49 |
| Lesson C—7. Preserving foods. Susannah Usher, instructor in home economics, University of Chicago..... | 57 |
| Lesson C—8. Preventing waste of human beings. Robert E. Park, professional lecturer in sociology, University of Chicago..... | 65 |
| CHAPTER III.—MACHINE INDUSTRY AND COMMUNITY LIFE. | |
| Lesson C—9. Inventions. W. I. Thomas, professor of sociology, University of Chicago..... | 73 |
| Lesson C—10. Iron and steel. J. Russell Smith, professor of industry, Wharton School of Finance and Commerce, University of Pennsylvania..... | 81 |
| Lesson C—11. The effects of machinery on rural life. John M. Gillette, professor of sociology, University of North Dakota..... | 89 |
| Lesson C—12. Patents and inventions. George A. Mirick, Cambridge, Mass.. | 97 |
| CHAPTER IV.—NATIONAL CONTROL AND FOOD CONSERVATION. | |
| Lesson C—13. Market reports on fruits and vegetables. Based on material procured from the Bureau of Markets, United States Department of Agriculture. | 105 |
| Lesson C—14. The United States Fuel Administration. Material supplied by the United States Fuel Administration..... | 113 |
| Lesson C—15. Sugar. Ruth Reticker, school of commerce and administration, University of Chicago..... | 121 |
| Lesson C—16. The commercial economy board of the Council of National Defense..... | 129 |
| CHAPTER V.—CUSTOMS, LAWS, AND FORMS OF GOVERNMENT. | |
| Lesson C—17. Custom as a basis for law. Edith Ayres, University of Chicago.. | 137 |
| Lesson C—18. Cooperation through law. Arthur W. Dunn, United States Bureau of Education..... | 145 |

| | Page |
|---|------|
| Lesson C—19. How the city cares for health. Frederick D. Bramhall, instructor in political science, University of Chicago..... | 153 |
| Lesson C—20. The family and social control. Ernest W. Burgess, assistant professor of sociology, University of Chicago..... | 161 |
| CHAPTER VI.—BUSINESS ORGANIZATION AND NATIONAL STANDARDS. | |
| Lesson C—21. Before coins were made. Katherine McLaughlin, teacher in the University of Chicago Elementary School..... | 169 |
| Lesson C—22. The minting of coins. Ruth Reticker..... | 177 |
| Lesson C—23. Paper money. Ruth Reticker..... | 185 |
| Lesson C—24. Money in the community and the home. Edwin A. Kirkpatrick, head of department of psychology and child study, State Normal School, Fitchburg, Mass..... | 193 |
| CHAPTER VII.—CONCENTRATION OF POPULATION, INDUSTRIES, AND INSTITUTIONS. | |
| Lesson C—25. A seaport as a center of concentration of population and wealth. J. Paul Goode, professor of geography, University of Chicago..... | 201 |
| Lesson C—26. Charity in the community. Edith Abbott, Chicago School of Civics and Philanthropy..... | 209 |
| Lesson C—27. Early transportation in the Far West. Howard C. Hill, instructor in history, University High School, University of Chicago..... | 217 |
| Lesson C—28. The first railway across the continent. Howard C. Hill..... | 225 |
| CHAPTER VIII.—THE WORKER AND THE WAGE SYSTEM. | |
| Lesson C—29. Child labor. Julia C. Lathrop, Chief of the Children's Bureau, United States Department of Labor..... | 233 |
| Lesson C—30. Social insurance. John B. Andrews, secretary, American Association for Labor Legislation..... | 241 |
| Lesson C—31. Immigration. Leona Powell, department of political economy of the University of Chicago, and William Jett Lauck, Washington, D. C.... | 249 |
| Lesson C—32. Housing for workers. Harlean James, housing committee, Council of National Defense..... | 257 |

THE WHITE HOUSE,
WASHINGTON,
August 23, 1917.

TO SCHOOL OFFICERS:

The war is bringing to the minds of our people a new appreciation of the problems of national life and a deeper understanding of the meaning and aims of democracy. Matters which heretofore have seemed commonplace and trivial are seen in a truer light. The urgent demand for the production and proper distribution of food and other national resources has made us aware of the close dependence of individual on individual and nation on nation. The effort to keep up social and industrial organizations in spite of the withdrawal of men for the Army has revealed the extent to which modern life has become complex and specialized.

These and other lessons of the war must be learned quickly if we are intelligently and successfully to defend our institutions. When the war is over we must apply the wisdom which we have acquired in purging and ennobling the life of the world.

In these vital tasks of acquiring a broader view of human possibilities the common school must have a large part. I urge that teachers and other school officers increase materially the time and attention devoted to instruction bearing directly on the problems of community and national life.

Such a plea is in no way foreign to the spirit of American public education or of existing practices. Nor is it a plea for a temporary enlargement of the school program appropriate merely to the period of the war. It is a plea for a realization in public education of the new emphasis which the war has given to the ideals of democracy and to the broader conceptions of national life.

In order that there may be definite material at hand with which the schools may at once expand their teaching I have asked Mr. Hoover and Commissioner Claxton to organize the proper agencies for the preparation and distribution of suitable lessons for the elementary grades and for the high-school classes. Lessons thus suggested will serve the double purpose of illustrating in a concrete way what can be undertaken in the schools and of stimulating teachers in all parts of the country to formulate new and appropriate materials drawn directly from the communities in which they live.

Sincerely, yours,

WOODROW WILSON.

shown how his life is interdependent with the life of other members of society. The child's first experiences with social life are those of a dependent and a consumer. There is little sense of responsibility until one begins to think of himself as obligated to consume wisely and to contribute to production. In these days when every individual in the Nation must conserve and when the responsibility for wise use of everything is a national duty, there are a unique demand and a unique opportunity to give pupils training in civic responsibility.

The method of securing these three ends is to present in the form of short sketches certain descriptions of the facts of national and community life. Each lesson is a unit intended to be read and studied by the pupil. The lesson is carefully prepared by a specialist and is filled with information which will reward the pupil for his reading. Each lesson is also part of a series in which the different lessons approach the same central theme from various angles. The lessons do not exhaust the theme which they illustrate. At the bottom of each page series of questions are set down in the hope of stimulating the pupils as well as the teachers to carry the methods of the Lessons further. Especially is it hoped that the Lessons will lead to studies of the local institutions which are around the school. A genuine study of community life must take up the familiar environment at the door of the schoolroom. The laboratory for these Lessons is in the home environment and the industrial environment of the pupil.

It is hoped that the Lessons will lead teachers and school officers to new efforts in the direction of a vital study of community life and that they will encourage publishers to bring together in available textbook form much material of a similar type.

The immediate purpose which gave rise to the Lessons should also be kept in view. The Nation has need of the help of every child within its borders. The food supply of the world is running low. Our Allies are in want. Our children must learn to save. It is believed that a free people can be appealed to effectively if the case is clearly laid before them. American children are not to be ordered to deprive themselves of familiar luxuries; they are to be told how urgent the need is. The lesson of civic responsibility, if learned in this rational way, will effect the saving that the Nation needs.

CHARLES H. JUDD.

LESSONS IN COMMUNITY AND NATIONAL LIFE.

SERIES C.

Chapter I.

SOCIAL ORGANIZATION AND THE EFFECTS OF WAR.

This chapter shows how men organize, plan, and cooperate in meeting their wants; and it shows why it is necessary to economize, since goods and energy used for one purpose are not available for any other. The development and use of aeroplanes are utilized as means to convey the lessons of social organization.

Man does not live of himself alone, but he depends upon others for much that he enjoys. In the early history of this country families, and sometimes even individuals, were so isolated that they were obliged to rely upon their own efforts for nearly everything that they had. They produced their own food and made their own clothing because they could not well get it in any other way. Since then factories have been built to manufacture the goods that men need, and railroad systems and steamship lines have been developed to distribute those goods far and wide. It is no longer necessary for one to make all that he wears and to produce all that he eats, and he is free to devote his time to the work which he can do best in the situation in which he finds himself.

We depend on others, therefore, for much that is necessary to us, and we suffer if those others do not do all we expect them to do. The farmer must raise crops, the weaver must make cloth, the miner must dig coal, and the railroad men must bring those things to us. And we in our turn must do our share of the world's work or somebody else will suffer for it in ways that we do not realize. All this is what men mean when they say that we live in a cooperative society.

LESSON C-I.—THE WAR AND AEROPLANES

By HARRY O. GILLET, Principal of the University Elementary School, and DOROTHEA SCHMIDT, of the School of Commerce and Administration, University of Chicago.

Men have always wished to fly. They have watched the birds and envied their swift motion and easy pathway through the air. How much easier it would be, they have thought, to fly than to walk slowly over the ground. In the stories that they invented for their children there have always been seven-league boots and magic caps that easily carry their owners as on wings over great distances.

FLYING THE MOST MODERN ART.

Until the past few years this desire to fly has not been gratified. The reason for this is that it is only after a great deal of work and much careful planning that man can do what nature did not prepare him to do. Man can walk easily because nature prepared him to walk by giving him legs. Man has to learn to swim, and it costs him some time and effort to acquire the art, because nature did not make him to live in the water. He can learn to swim without serious difficulty, however, because nature made his body about the same weight as a like amount of water.

Man could not fly because nature gave him a body much heavier than air and gave him no broad, strong wings with which to support himself as the birds do. The result is that no matter how much he wished, his wishes were in vain until by long centuries of planning he finally invented the machinery and built the wings with a skill that he had acquired by many and many an encounter with nature's problems.

The fact is that flying, like everything else that man has learned to do in order to satisfy his desires, is the result of work. Not only does one man work, but fathers have taught sons for many generations, until now we have gradually put together a good many devices for getting from nature what we want.

We know how to get from nature warmth when it is cold, because we can build a fire. We know how to get crops for food by planting and harvesting. We know how to get meat from the forests,

Materials with which teachers and students may supplement these lessons will be found in the following books:

FOR OLDER PUPILS.

Clay, Henry.—Economics for the General Reader. Macmillan.

Ashley, R. L.—The New Civics. Macmillan.

Marshall, L. C., Wright, C. W., and Field, J. A.—Materials for the Study of Elementary Economics. University of Chicago Press.

Report of the Thirteenth Census of the United States. Especially for the lessons in this section: Classified Index to Occupations.

FOR INTERMEDIATE PUPILS.

Dunn, A. W.—Community Civics. D. C. Heath & Co.

Nida, William L.—City, State, and Nation. Macmillan.

Richman and Wallach.—Good Citizenship. American Book Co.

FOR YOUNGER PUPILS.

Hill, Mabel.—Lessons for Junior Citizens. Ginn & Co.

Readers by Carpenter on various incidents, such as "How the World is Fed." American Book Co.

and, better still, we have learned to raise domestic animals. All through history and even before history began to be written men have been learning to get by their own efforts the things they want even when nature did not at the outset provide them with the means of gratifying their desires.

The long account of how man has learned these lessons of satisfying his wants is the interesting history of inventions. When man invented the bow and arrow he made himself stronger through his invention. He made it possible to get game more easily and thus to supply his wants. And so on through the long list of inventions.

WAR LEADS TO MANY INVENTIONS.

One of the most striking facts about man is that he has learned many of his lessons not while trying to get things that he wanted from nature, but while trying to overcome his fellow men. War has always furnished some of the strongest motives for invention. Early men gave most of their time and attention to weapons—more even than to the devices used in peaceful occupations.

The present war, like every war, has brought out all kinds of inventions. Fortunately, some of these will be helpful to man when the struggle is over. For example, there are many new ways which surgeons have worked out for the treatment of wounds. In times to come these will be used to cure men who have been injured in ordinary life. There have been many inventions of new kinds of weapons, some of them of huge size and great destructive power. It is hard to see how these will help men, unless, indeed, they reach such a stage of perfection that they will prevent more war.

Of all the results of this war one will probably stand out as the most conspicuous achievement. It is the conquest of the air. Man has at last learned to travel through the air, to watch his enemy from the bird's point of view, to make attacks from above, and to dart hither and thither at great speed and at great heights.

Experiments in flying had been carried on for years before the war, but these experiments meant hard work and danger to the men who tried them. The expense of even the simplest glider, as

-
1. How many different kinds of kites are there?
 2. What is the largest kite that you ever saw? Could it lift a weight?
 3. Are kites useful for any purpose except amusement?
 4. What is the difference between the wings of an eagle and the wings of a chicken?

a flying machine without an engine was called, was so great that few men could or would afford to try making them.

THE FIRST AEROPLANES.

Two Americans, the Wright brothers, saw the importance of flying, however, and kept on trying until they learned, first, how to make wings that would support them in the air and, second, how to make an engine light enough and powerful enough to drive the propeller of their machine. The first successful flight in an aeroplane driven by a propeller was on December 17, 1903, over the sand dunes of Kitty Hawk, N. C., where for a long time the Wright brothers had been experimenting. The flight lasted straightaway for 12 seconds. On September 15, 1904, they had so perfected their machine that they could stay in the air longer and could control the direction of its flight well enough to make a turn. On October 17, 1905, they made the first flight which lasted over half an hour. The machine stayed up for 33 minutes and 17 seconds.

In the early machines the pilot sat with his legs dangling below the wings, and the many wires that braced the wings cut the air, making all sorts of cross-currents. The new machines are like the old ones in their general plan, but the parts are as far as possible inclosed in a boatlike body which cuts the air and makes the flight smoother. There is often more than one propeller. The engines are of great size and power, and the planes have become large enough and strong enough to carry as many as 27 men, besides guns and ammunition.

AEROPLANES AS WAR MACHINES.

The rapid development which has been made since 1903, when the two American inventors made their first successful flight, has been due almost entirely to the desire of nations to become more powerful in war. That nation which could send up fliers and watch the enemy would have a great advantage, because the number and positions of the enemy would be known and the enemy could not make any surprise attacks. Before the days of

-
5. How many different kinds of flight have you observed in birds?
 6. Before the day of aeroplanes how did people succeed in going up into the air?
 7. What does a man find with regard to temperature conditions and with regard to the density of the air when he rises to a high elevation?

flying machines it was a very common trick in war for an army to steal up on its enemy and attack before the surprised soldiers on the other side could defend themselves.

Then, too, if explosives are dropped from above they not only do great harm, but keep the enemy in an anxious state of mind which is quite as bad as physical injury.

DEMONSTRATIONS OF VALUE IN WAR OF 1911.

The war between Italy and Turkey in 1911 was the first war in which these uses of the aeroplane were clearly shown. The Italians had a great advantage over their enemies because they had fliers. The result was that all the nations of Europe began to build flying machines. They saw that they would need such machines for war. In peaceful America where the idea had first been worked out there was no such strong motive for building aeroplanes, and their construction developed very slowly. They were used mostly for exhibitions and amusement.

GREAT DEVELOPMENT OF THE INDUSTRY.

Since the war began in 1914 the construction of aeroplanes has gone forward with leaps and bounds. Our own country has now undertaken to build them on a very large scale, especially since we entered the war. Great Britain is said to employ 66,000 men in the making of flying machines and to turn out 41,000 a year. On July 14, 1917, the Congress of the United States appropriated \$640,000,000 for the aviation service. This was in addition to \$50,000,000 which was set aside in another appropriation. Other nations are building planes as fast as they can.

It takes a great deal of work and material to make a plane. About 4,000 hours of work go into the making of an aeroplane of ordinary size. This means that 80 men have to work for a whole week on a single machine.

The frame is made of mild steel or of spruce wood, which for an equal weight is nearly three times as strong as steel. The wings are made of linen covered with four or five coats of varnish. Cotton and silk have been tried, but they are not so durable as linen.

8. What is the difference between a dirigible and an aeroplane?

9. Men succeeded in making boats very early. Why were boats easy to make? What are the materials out of which the earliest boats were made? How has that material changed in recent times?

TYPES OF MACHINES NOW IN USE.

There are many different styles and sizes of war machines. At present four styles are common: (1) Scouting machines, (2) bombing planes, (3) planes for artillery observation, and (4) battle planes.

The scouting machines must be swift and capable of long flights. They carry great quantities of gasoline, special cameras for photographing the enemy, machine guns for attack and defense, and a wireless set with which to make reports. The biplane of these machines commonly have a spread of 43 feet and have motors of from 80 to 150 horsepower.

The bombing planes are heavy and powerful, but slow. They often make their flights at night and are usually accompanied by lighter, swifter machines which protect them. They have motors that produce 200 horsepower or more. They carry great weights of bombs which they drop on the enemy.

One interesting fact about these machines which shows how difficult it is to land any aeroplane is that they have to get rid of all their bombs before they try to come down; otherwise the shock would explode the remaining bombs and destroy the machine itself.

The artillery planes fly over the enemy and watch where the shells strike which come from the cannons of the aviator's own army. These planes must be very light and stable, so that the flier can hover over any position that he wants to watch. The wings have a spread of 30 feet and the engines are of a powerful rotary type.

The battle planes are light and must be able to climb very swiftly, for in a combat the position of advantage is always above. The flier climbs swiftly and then darts down on his enemy.

When the war is over there will be great factories for building aeroplanes, and there will be many trained pilots who can guide them. It is difficult to foretell what use will be made of the

10. What are some of the preliminary inventions which were necessary before modern steamships made of steel could be substituted for the older boats?

11. How does one generation get the benefit of the knowledge and inventions of an older generation?

12. It is sometimes said that inventions have been made more rapidly in the past hundred years than during the whole previous history of mankind. Why is this so?

machines that have been built for war. Some of them will probably carry mail. Some of them may carry passengers. We are told that it will be possible for passengers to fly from New York to London in 15 hours. If this can be done, it will save a great deal of time and also the inconvenience of sea travel.

RAPID INCREASE OF AEROPLANES DISTURBED OTHER INDUSTRIES.

Whatever happens after the war, a great, new industry has suddenly grown up in order to supply the present demand for aeroplanes. Most industries grow up very much more gradually. They begin in a small way and satisfy some need by making an article that is cheaper or better than that which people have been using before. For example, people used to make their own plows and their own cloth. When the methods of producing these things by machinery began to develop, the home industries were gradually given up, because the factories could make the things much better and much cheaper. But it took time for the factories to put up their buildings and get together machinery. There would be some uncertainty, too, in the minds of people about the success of any given factory.

In the case of the aeroplanes, governments have been so eager to secure them that they have given contracts for large quantities and men have therefore been able to go ahead rapidly with the building of aeroplane factories. Factories have had some difficulty in securing workmen and materials, and have had to take them away from other kinds of shops. The result is that the very rapid growth of this one kind of factory has disturbed the industries of the country to some extent.

The ordinary factories have not found it easy to get enough workers and materials to keep up the manufacture of clothes and shoes. The result is that all of us, even though we are not directly concerned with the making of flying machines, feel the effect of the war through the increased difficulty we experience in getting the things that we need for common life.

13. What are some of the inventions by which men have extracted from nature the things that they want?

14. Mention a number of inventions that war has stimulated in times past.

15. Look up pictures of the different types of flying machines. How does a biplane differ from a monoplane?

16. Could the flying machine make use of a steam engine?

INTERDEPENDENCE.

The whole Nation is directly or indirectly concerned in every industry, no matter whether it be one that supplies things for war or one that makes ordinary things, such as are used in time of peace. Suppose some business man runs a factory which makes shoes. Notice how many people are directly interested in his factory. First, there are the people who work for him and get wages. They use these wages in buying all sorts of things, and the people who sell to them thus come to have an interest in the existence of the shoe factory. Next notice the great numbers of persons from whom our shoe-factory manager buys things. He buys leather from the tanner, who has bought skins from a packing house that has bought cattle from a farmer. The factory manager also buys shoe nails, machines, and thread; each of these goods starts a chain similar to that started by the leather. Then, too, the railway is asked to haul materials used in the factory and shoes sent away from the factory, and it is paid for doing so. With this money the railway managers buy countless things, and each of these things starts a chain similar to that of the leather. There is almost no end to the connections of this shoe factory with other industries and the people who work in them.

This interdependence was not caused by war. War has merely made us more aware of it. For example, when we began to build aeroplanes in great numbers, we found it affected many people. We should try to keep this fact of interdependence in mind whenever we study any of the facts about community and national life.

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LESSON C-2.—SPINNING AND DYEING LINEN IN COLONIAL TIMES.¹

Most of us do not know how the things that we use every day are made. The reason is that we do not have to make them ourselves. We can buy them at stores where they are kept in their finished form. We do not see the factory in which they were made because it is often hundreds of miles away.

There was a time in the history of this country when all this was very different; people had to make almost everything that they used. In those days everybody, even the youngest member of the family, saw how cloth was made from wool or flax or other kinds of fibers, how shoes were made from the hides of animals, and where the food came from before it was brought to the table.

WHAT COLONIAL CHILDREN MADE.

Not only did the children of this earlier period see these things made, but they had a share in the work. The result was that our great-grandfathers and great-grandmothers knew, even when they were 12 or 14 years old, how to do a great many things that it would seem very strange to ask a modern boy or girl to do. In the earliest days of the country's history, in what we call the colonial period, a boy of 12 to 14 had a share in making the crude plows, harrows, sleds, wagons, and carts of that day. He made shovels, flails, swingling knives; he made handles for spades, for axes, hoes, and pitchforks. He could make brooms, baskets, wooden bowls, and had helped in making maple sirup and cider. The girls of the same age could spin, weave, sew, embroider, knit, and darn; they could prepare a meal and make butter, cheese, and candles.

To be sure, the children of that day did not know about many of the things which are very common to-day, and the result is that the world in which they lived was much narrower than our world. For example, they did not have the morning paper to tell them what was happening all over the world. There was no telephone or telegraph; there were no railroads or automobiles. The food which they ate came from the fields and woods and rivers near

¹ Prepared by R. M. Tryon, assistant professor of the teaching of history, University of Chicago.

This lesson shows how many steps are required to make something that looks very simple when it is done. It also shows how independent a colonial family was of its neighbors. By contrast it will help the reader to realize the extent to which in modern times people and even nations depend on one another.

home; they did not have markets where one could buy vegetables and meats and fruits from distant parts of this country or from other parts of the world.

HOME MANUFACTURING NOT COMMON TO-DAY.

To-day we are much better supplied with all kinds of things because we have learned to work together each one doing his special part. We have learned, too, through trade to pass around the things which we make. But the Nation is so large and the work of manufacturing things so much divided that few of us are likely to know about the making of most of the things we use. We should understand our own world much better if we could go back and live with our great-grandfathers and our great-grandmothers and see them make cloth and shoes and tools, and could then gradually grow up with the new ways of doing things and with the new inventions that have come since their time.

If we can not really take this journey from colonial times to the present, we can at least find out by reading how people of that day lived and did their work. We shall then be able to understand better our own modern ways. We might take almost any one of the things around the house. Perhaps the most common one is cloth. A very large part of the Nation's time and labor goes into the making of cloth. Let us take one of the hardest kinds to make, namely linen, which is made from flax.

RAISING FLAX AND GETTING THE FIBER.

In colonial times the family began at the very beginning. They could not get flax from any other country, so each family planted a little patch of flax, large enough to supply its own needs. The

1. Name a half dozen manufactured articles which you use every day. See if you can tell where any one of them came from originally, where the material of which it is made was found, and who put its various parts together.

2. Why do we not know where the things we use come from?

3. Suppose you visited the factory where your bicycle or skates were made. Would you then know all about the source of those articles?

4. What kinds of work can modern boys and girls do? What could colonial children do? Were colonial children much brighter and more capable than modern children? How did it happen that they could do so many useful things about which modern children do not know anything?

planting was in April or May. When the plants were 3 or 4 inches high they were weeded, usually by the children. In July or August the flax was grown and ready to use. It was pulled by the farmer and his boys, not cut, because cutting would injure the fibers.

The next task was to get the fibers from the plant. First, the heads containing the seeds had to be pulled off. Sometimes this was done by pulling the plants through a kind of rake. Then came the real work of getting the fibers. The fibers, which are from 12 to 30 inches long, grow in the stalk just inside the bark. They had to be separated from the woody parts of the straw. This was done by wetting the plants or by leaving them out in the dew until the woody part had rotted. After this "retting," as it was called, had taken place it was possible for the family, by further work, to separate from the woody part the fine tough fiber. During the retting the flax had to be carefully watched to make sure that the fibers did not suffer.

After the woody parts of the fiber had been broken up by retting, the stalks were dried and put away until winter, when, during the days suitable only for work indoors and during the long evenings, the family could work on the fibers.

During the winter the dry stalks were brought down from the loft where they had been stored and were beaten in several different ways to free the fibers from the rest of the stalk. The first step was to "break" the straws with a heavy homemade beater. This broke up the woody part of the stalk. Then the broken stalks were beaten again by a two-edged paddle called a "swingling knife." A strong man could swingle about 40 pounds of flax in a day.

It was customary to swingle the flax more than once. After the last swingling the rolls of fibers were sometimes pounded in a wooden trough with a great wooden pestle-shaped mallet over and

5. Does a boy living on a farm to-day know how to make all the *things* the colonial farmer's boy could make? Why can he make more of them than the modern city boy can?

6. Where did the people of colonial times get their food? Name what *you* ate for breakfast and dinner yesterday and tell where all of them *came* from, including the seasonings, spices, etc. How does it happen that you can so easily have sardines from Portugal or olive oil from *Italy*? Could the people of colonial times have such things?

7. Why does not every family in New York or Minneapolis keep its *own* orange tree?

over again until they were soft. The flax was then ready to be turned over to the women and girls. Up to that point the work was heavy and had been done by the men and boys.

MAKING FIBER INTO THREAD.

When the flax came into the hands of the mother and her daughters, the first process was to "hatchel" it. This was done with a device which may be described as a number of combs put together. The teeth were made of small pointed iron rods about 6 inches in length. There were seven rows of such teeth, one row back of the other, with 12 teeth in each row. The mother fastened the hatchel to a chair by means of a string or stick and, seating herself in another chair, with one handkerchief pinned about her neck and another tied about her head to keep off the dust, drew the fibers through the hatchel. The purpose of this combing was to straighten out the fibers, to remove the last of the woody parts of the stalk, and to take out the short, broken, or coarse fibers. Hatcheling required skill to remove all the waste material and not throw away any of the good fibers. So the skillful housewife wound the bundle of fibers tightly around the fingers of one hand, and thus holding it drew the flax through the hatchel till the long threads lay in smooth piles with all the woody particles removed and the "tow," or short fibers, combed out.

After being straightened in this way, the fibers were ready to be spun into thread. Spinning is done by twisting the fibers together so that the long thread made up of a great many of the fibers holds together. If one examines any kind of thread, one will find that it is made up in this way of fibers twisted together.

8. Why do most people nowadays spend their time making things which they can not use and then turn them over to other people? Was not the colonial family which made for itself all the things it needed more sensible than a modern family where, for example, the father works the year round decorating the walls in flats and houses in which he never intends to live, the son makes parts for the steering gear of aeroplanes in which he will never fly, and the daughter pastes labels all day on cans of glue which are of no use to her?

9. "We should understand our world much better if we knew how things are made." Would it be possible for any one person nowadays to know how everything is made? Why not? How many things can one person know about? Do you know all about the making of any one thing?

Spinning was done many centuries ago entirely by hand, but about the date of the discovery of America, or a little later, some clever man about whom there is no record made the spinning wheel, which is driven by a foot treadle and works much faster than the hand spindle.

The spinning wheel used for linen thread was known as the little wheel. It was about 20 inches in diameter and was kept in motion by the treadle. A cord or belt passed around the wheel to the spindle. When the wheel was driven by the treadle it kept the little spindle or stick on which the thread was twisted spinning around as fast as can easily be imagined.

Taking a bundle or distaff full of the fibers that had been combed out or hatched, the spinner would by a skillful motion of the hand let the spindle twist the fibers into a thread and then wind up the finished thread as on a spool.

WEAVING.

We have followed the making of linen to the point where the fibers have been made into thread. It would require another long description to tell how the cloth was woven from this thread. We shall not take up that part of the colonial family's work. It would be worth while to look up the matter in some of the books that tell how the early weavers worked. Or it may be easier for the pupil to get some of the descriptions that tell of the modern machines driven by steam in a mill of our own times, which turns out hundreds of yards of cloth every day.

For our purpose it is enough that we get some notion from our study of the making of linen thread of the slow tedious work which the colonial family had to go through in making cloth and of the

10. If we make things to-day by methods different from those used in colonial times, why should we bother to read about how the colonists worked?

11. If we wish to learn to understand modern life by understanding how things are made, why should we choose cloth to study instead of microscopes?

12. What things are made in our homes to-day?

13. The colonial family made many of the things it used. The city family of to-day does not. Does this mean that the members of the city family do not work as hard as those of the colonial family?

14. When a colonial family wanted a new set of linen tablecloths and napkins, how long did it take them to get those articles? How long does it take a modern family?

fact that one person might have done the work at every stage. To-day, as then, somebody must work, step by step, watching over the flax as it grows, as it is separated from the straw, and as it is combed out. The difference is that the different steps are usually done far from each other, and by people who each do only one of the many parts of the work necessary to make flax into cloth.

There is so much hand labor required to make linen even to-day and the work is so slow that there is very little of it made in the United States, where we prefer to do our work quickly and by machinery. Then, too, the flax which can be raised in this country is not so good as that raised in Russia and Belgium, and there is no place in the world where it can be cured or taken care of so well as in Belgium, where the waters of the river Lys seem to be especially suited for the curing of flax.

The ships and railroads which bring people into easy reach of each other have made it possible for the modern family to give up the making of linen and depend on other countries where it can be made better. A good deal of our linen is made in Ireland. The Irish people have grown so skillful that fibers are now sent there from other countries to be spun and woven into cloth.

DYEING AND BLEACHING.

Even after the cloth was finished it was not ready for use. People of the early days, just as people of to-day, liked beautiful cloth. The linen as it came from the loom was a dull, murky shade. It must be made pure white, or it must be colored into some beautiful shade of blue or red or brown.

15. What part could each of the various members of the family take in helping to get the tablecloths? Could the children help?

16. While the family was busy procuring the set of table linen, could it do anything else?

17. Tell what devices or tools the colonial family used in changing flax into cloth. Do you know whether these devices are still used by families in some parts of the country?

18. Do we use such tools or devices in the modern factory? Is a modern factory anything more than great numbers of people gathered into one building and using the same tools which were used in colonial days?

19. Describe all that was done to the flax plant to get the fibers out. Is the modern method of getting the fibers much different from the older method?

Sometimes the thread was colored before it was woven, but more often the dyeing was done with the cloth. The materials for coloring were not our modern dyes. The woods supplied the coloring matter. The boys and girls went out and gathered the sumac, and their mother boiled it up for a dye, or they gathered the bark of the black oak or the chestnut or other trees.

Hickory bark or peach leaves furnished the yellows; black and white walnut bark or hulls, when mixed with sumac berries, furnished the browns or rusty blacks; sumac berries alone, the deep warm reds; oak and maple, the shades of purple; and cedar berries, the delicate dove or lead colors. When it was possible to get from some trader coloring material from other parts of the world, gay colors were added to the somewhat duller hues which came from the vegetation near home.

If the linen was not to be colored, it had to be made white by bleaching. The skeins of thread usually went through several bleachings before they were woven. The skeins were first placed in warm water for three or four days. During this time the water was frequently changed and the skeins wrung out each time. After this treatment, they were washed in clear pure water from the spring or brook. Then they were treated with ashes and hot water over and over again, and finally placed in clear water for another week or so. On being taken out of this they were seethed, rinsed, beaten, washed, and dried, and finally wound on bobbins for the loom. The bleaching was sometimes done with slaked lime or buttermilk instead of ashes.

If the cloth made from the carefully bleached thread was not white enough, the mother spread it out on the grass and fastened the corners down with sticks. Pure water was then carried and sprinkled over the outspread linen. This process was repeated

20. What was a hatchel used for? Could the children use it?

21. After the fibers were separated and cleaned, how were the ends fastened together so as to make one long thread out of the many short pieces?

22. From first to last, how long do you think it took the colonial family to get its linen thread made ready to weave? Can we get linen thread to-day more quickly? What part of the process takes just as long now as in colonial days?

23. Why do we let the people in Belgium and Russia raise our flax for us and the people of Ireland make it into linen? Why are the Irish so skillful at this work?

24. How did the colonial people color their linen? Could they have any color they wanted?

hour after hour and day after day until the sun had completely whitened the cloth. It often took weeks to bring it to the desired shade. To make cloth pure white, it was sometimes soaked in buttermilk.

The modern methods of dyeing and bleaching are different. Dyes from coal tar are commonly used these days, and the bleaching is done for the most part with chemicals in the mills. As a result, the whole process has been made cheaper and more rapid. Here we see the beginnings of the application of science. Chemistry is the science that has given us dyes and bleaching substances and has so changed the methods of dealing with cloth.

MAKING THINGS DEPENDS IN MODERN TIMES ON COOPERATION.

Perhaps we have not thought of the long process through which every piece of linen which we see around the house has passed on its way from a flax field somewhere in the world to the table on which it is spread as a tablecloth or to the bed on which it serves as a sheet. The colonial boy or girl would have known where it came from because he had followed it step by step and would think back to the long hours of gathering flax and coloring bark or to the hard work of swingling or bleaching.

Furthermore, the colonial boy or girl would know at once the differences between cotton cloth and woolen cloth and linen. He or she had followed in the same way the wool from the sheep's back until it became homespun clothes. The world must have been very interesting to those boys and girls, because most of the things about them were easy to understand, since they were made in the home.

Our things come from distant factories or even from other countries. Because we enjoy the results of the work of other people we must also try to understand how intimately we are interested in Belgium, where the finest flax grows and is cleared of its woody parts by the river Lys, or in Russia, from which we get much of our flax, or in Ireland, where they make the fibers into thread and cloth.

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LESSON C-3.—THE WATER SUPPLY OF A TOWN OR CITY.¹

Every human being and every animal must have water. One can go without food for some time but not long without water. Although we want shelter and the other comforts of life, we do not require them as we require water.

So urgent is the need of water that all through history people have made their homes near water supplies. The Arabs of the desert settled on oases where there were springs. The Romans built their city on the Tiber River. The Pilgrims, having landed in Cape Cod Bay, sent out an exploring party to find a suitable place for settlement. An old journal tells us that after several days' search Capt. Standish and his party "marched into ye land and found divers cornfields and little running brooks, a place fit for situation."

THE MANY USES OF WATER.

Water is used not merely for drinking but for many other purposes. It is used in modern life for manufacturing purposes. It furnishes power at a waterfall. It is put into a boiler and is turned into steam which drives an engine.

Water is also essential for cleanliness and health. Not only do we use it to keep our bodies clean, but with it we wash everything around the house. The need for water has greatly increased with the growth of cities and with the growth of modern ways of living. We have learned that it is important for us to keep the city clean by flushing the streets and by building sewerage systems through which water carries away the refuse of the city.

Fortunately, nature has been very bountiful with this necessity. Water is usually easy to find. It comes down in the rain and runs off into the streams or sinks into the ground. After collecting in the ground, it often forms springs. The water from springs and streams often forms ponds or lakes.

WELLS AS SOURCES.

In many farmhouses and in many small towns people get their water from wells. There are many kinds of wells. One is the so-called dug well. It consists of a hole dug in the ground,

¹ Prepared by Grace E. Storm, teacher in the University of Chicago Elementary School.

This lesson shows how a city has to take charge of a matter of vital importance in which everybody in the city is concerned. It also shows why all citizens should be informed on such matters.

usually at a short distance from the house and barn. When the well has been made deep enough to reach the water stored up in the ground, the sides of the hole are stoned or bricked up, and a platform with a curb and a hoisting arrangement of some kind, perhaps a rope and a bucket or a pump, is placed at the opening. If the top is not covered, as is often the case, the water may be made impure by animals and leaves that fall in. Also there is danger, unless the well is built on high ground, that surface water will run into it during every shower and make the water impure. If the lining is not tight, surface water seeps into the well through the sides.

The dangers of the open well led to the invention of the driven well. This is simply an iron pipe fitted with a pointed strainer and driven into the water-bearing ground, often far below the surface. If the point is driven down 50 feet, all the rain water entering the well passes through 50 feet of soil and is filtered in the process. When wells are drilled, layers of dense rock are sometimes found. These must be bored through. Below the dense rock are layers of porous rock, full of water. Sometimes when this porous rock is thus tapped, the water gushes up with great force into the air, and no hoisting arrangement is necessary. The well is then called an artesian well. Water from these wells is pure, but it contains much mineral matter that it has taken up in its travels. It is said to be "hard," and it is not so easy to use it with soap as it is to use the soft rain water.

A CITY NEEDS MUCH WATER.

So far we have been describing springs and wells which can be used by families requiring only a small amount of water every day. A city can not depend on an ordinary well because the quantity of water required is very great. It is estimated that

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1. How is water provided for the human body otherwise than through the water we drink?
 2. How do animals that live in arid regions provide themselves with water?
 3. What are some of the uses to which water is put in manufacturing, other than to furnish power?
 4. Can you find out how much water your family uses in a day?
 5. How much water does a washing tub or a bathtub hold?
 6. In what way is it true that life in a city creates new demands for water?

each person in a modern city uses not less than 50 gallons of water a day. If we count in the great public uses, such as manufacturing plants, fountains, fire hydrants, the sprinkling of lawns, and the flushing of streets, the amount used for each person amounts to 200 gallons. It can readily be seen that a great number of ordinary wells would be needed to supply water to a city, say, of 25,000 people. When people come to live together in such numbers, a water system is one of the things which they have to unite in building.

PUBLIC WATER SYSTEMS.

The water system is a public matter because everybody in the city wants water enough and wants to be sure that the water supplied is pure.

Ancient cities had water systems, though they did not have our modern pumping stations or pipes in houses. The Romans, for example, finding that the water of the Tiber was impure, since it received the refuse of the city, worked out the most wonderful water system of all ancient peoples. They brought drinkable water into the city from mountains and springs 40 miles away. To do this they built aqueducts. The early ones were lead pipes almost wholly underground; their later ones were on stone arches. In the year 64 A. D. there were at least eight aqueducts in Rome.

The experience of Rome has been repeated in one form or another in most towns. At first the town gets its supply from wells or from a near-by river or lake. The increase in houses soon results in conditions that make a change necessary. The wells do not furnish a sufficient supply, or the well or river becomes impure because water which has been used flows back into the well or river. This is almost certain to happen in thickly populated sections.

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7. Why does exercise create a demand for more water to drink? In what kinds of weather do we drink most?
 8. What part of the earth's surface is covered with water?
 9. Are all great rivers attractive to settlers?
 10. How did people decide where to dig wells?
 11. What was the earliest method of getting water from wells?
 12. Can you find passages in the Bible which show the importance of wells to the Hebrews?
 13. How deep is a dug well? How deep can it be if a suction pump is to be used?
 14. Where does the water come from which supplies wells?

THE WATER SYSTEM OF CHICAGO.

The experience of Chicago is typical of that in many cities. When Chicago was a village, the people had wells, but they were shallow and allowed the surface water to seep into them, and since people were careless where they threw their refuse, cholera and typhoid broke out. The people of the village also obtained water from the Chicago River, but as the town grew larger and factories were built on the river bank, more refuse was thrown into the river, and the river became polluted and unhealthful. A third way of procuring water was by buying it from water peddlers who dipped it out of Lake Michigan. This, however, was an expensive way of getting water, and not everyone could buy.

The people saw that something must be done; so they united in erecting a public water system. A reservoir was built and an iron pipe was extended about 150 feet into the lake and a 25-horse-power engine was installed to pump the water from the lake through the pipe into the reservoir. From the reservoir it was distributed to the people through wooden pipes. There were surprises in this system. Some mornings when the faucets were turned on, small fish jumped out, and in winter the water in the pipes froze. Then, too, the supply of water from the reservoir was not enough for the growing town. Also the people found that the water in Lake Michigan about 2 miles from shore was cleaner than that nearer the shore. They wondered how to get this clean water to the city. Finally, Mr. Chesborough, the city engineer, thought out a plan.

TUNNELING UNDER THE LAKE.

They built an intake called a crib out in the lake and dug a tunnel 69 feet below the level of the lake. It was 5 feet high, 5 feet wide, and 2 miles from the shore. Miners and bricklayers worked in this tunnel for three years. One party of men started

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15. Why is the water in an artesian well under pressure?
 16. How can you tell when water is hard?
 17. What conditions may make water from buckets unhealthful? What measures can be taken to make well water pure?
 18. "People who are very careful about the water supply at home are often made ill by drinking impure water at a summer resort." Why are they likely to be careless at a summer resort? Why is the water at such places likely to be impure? What should a person do to safeguard his health in such a condition of affairs?

working from the crib and another party started from the shore and dug toward the crib.

When the tunnel was finished, it was joined to a large well in the city which was under a building called the "waterworks." This building had large pumps which pumped the water from the well into a reservoir and from the reservoir into large pipes called "mains." From the mains it was pumped into smaller pipes which took it to the people's homes. Then the people turned on their faucets and had clean water.

NEED OF A SEWERAGE SYSTEM.

After a while the water again became impure and the people could not think why, because the crib was built out in the lake where the cleanest water could be secured. They found the reason to be that the Chicago River flowed into Lake Michigan, emptying into it all the sewage of the city. When there were storms, the current washed the filth far out into the lake, and many people became ill. Some had typhoid fever and some had cholera, for these are the two diseases that impure water brings. The people decided to make the Chicago River flow another way; so in 1889 they began to dig a drainage canal which turned the current of the Chicago River into the streams that flow into the Mississippi River and thence into the Gulf of Mexico. Since then Chicago's water has been purer.

DISEASE AND IMPURE WATER.

We have already seen that there is a close relation between drinking water and disease. Drinking water may act as the carrier of the germs of at least two diseases, Asiatic cholera and typhoid fever. In the United States we are especially concerned with the latter. Water falling direct from the sky is pure. If it is allowed to fall on soil near where human beings have lived especially if any of these people have had typhoid fever, it will carry the microbes to those who drink it.

19. Calculate how much water would be used by the people in your town in a day if each person used 50 gallons. If each person used 200 gallons.

20. If your town has a water system, make a diagram showing the hydrants on the streets.

21. Find out how big a water main is. How does the pipe entering a house compare in size with the pipe running to a particular faucet?

22. A city water system has been compared to the arteries of the body. In what respects does this comparison hold true?

In early times people did not know that they risked their lives by drinking impure water. They were content to drink from wells that were near cesspools and stables. It was through bitter experience that people learned that the water supply must not be contaminated.

THE LONDON EPIDEMIC.

The first cholera epidemic to be traced definitely to drinking water was that of London in 1854. That year, out of a population of 36,406 in St. James Parish, there were 700 deaths. It was discovered that nearly all the deaths occurred within a short distance of the pump of Broad Street. The water from this pump was preferred for drinking because it was colder than the cistern water from the public water supply. Upon investigation it was found that in a house on Broad Street nearest to the well there had been four fatal cases of cholera previous to the epidemic and that refuse from these patients had been thrown without disinfection into a cesspool very near the well. Then the well was examined. The mortar joints of the old stone bottom had decayed, letting in the drainage water from the cesspool of the house where the cholera patients had died.

Fortunately, medical science has succeeded in stamping out cholera, so that it rarely appears in the western world. Typhoid however, which is the other disease likely to come from impure water, is not uncommon. Case after case can be found in cities which have grown careless. Cities are in this respect like individuals. Most of us have to be reminded again and again about even the common principles of hygiene. Still more does a town made up of many people need to learn the dangers of impure water by constant repetitions of those experiences which have shown how unsafe it is to neglect the water supply.

23. Can you make a sketch of the way in which a water system of a town spreads out through the streets?

24. Why are the pipes laid in the streets?

25. How far underground are they put and what is the reason for putting them where they are?

26. What makes the water run through the water mains and the faucets?

27. Sometimes in case of fire the pressure is said to be too low. What devices are used to increase the pressure at such times?

28. In high buildings in cities it is necessary to devise special ways to get water pressure. What ways are tried?

NEED OF KNOWLEDGE ON THE PART OF THE PUBLIC.

A part of the neglect comes from the fact that dangers increase gradually as the city grows gradually. At first there is plenty of water, and it is fairly pure. Then come more and more people, and trouble begins before anyone is aware of it. Another part of the neglect comes from the fact that it is only recently we have understood how serious are the dangers from impure water. Modern science had to study the problem and understand bacteria and the ways in which they are passed on to human beings before even the scientists could know how to safeguard the situation. Then the rest of us had to learn the facts. What is needed in this and many other like public matters is an alert body of citizens who have been trained to know how their wants are supplied and how their lives should be protected.

FILTERING SYSTEMS.

Sometimes it is not possible to get a source of supply which is sure to be free from impurities or from which clear water can be drawn. The only safe way to deal with the matter, then, is to purify the water at some point before it is sent through the pipes. There are several ways of doing this. One is called the sedimentation basin, which is a large tank capable of holding a two or three days' supply of water. The water passes slowly across the tank leaving its sediment and much of its impurities. The harmful bacteria, however, are not entirely removed in this way, and this system can not be relied on to make polluted water fit for drinking. Filters of more elaborate types are therefore constructed. In some of these the water is passed through beds of sand. In others chemicals are mixed with the water to purify it.

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29. What work has to be done to make a reservoir?
 30. What is an aqueduct? From what Latin words is the name derived?
 31. What natural advantages does a city like Chicago have in the matter of water?
 32. Can you decide from your knowledge of geography which cities in the United States have a serious problem in securing water?
 33. What would lead people to live in a city where water is very difficult to get?
 34. Why do people in the city sometimes buy bottled drinking water?
 35. Is it right for people to throw refuse into a river or lake? How can they be prevented from doing so?

Cities have been slow to build filters, because they are expensive and because it is a constant source of expense to keep them in operation. Usually a city has to learn through a disastrous epidemic the importance of an abundant and pure supply of water before the public is aroused to the need of a filtering plant.

PREVENTION OF WASTE.

In many cities it is necessary to prevent waste of water. Some people are careless, or in winter they let the water run to keep it from freezing in the pipes, and in summer they use it too freely to water the lawn or the garden. Then the city has to step in and restrict the amount that each one may use.

The city is quite right in preventing waste of water, for although nature has provided a vast supply, it is a very expensive process to get the water into the homes and business plants where it is used. It costs a great deal to construct a water system. Even after the system has been set up it costs a great deal every year for repairs, pumping, and upkeep. The money to pay for all this comes from taxes which the city collects from the people. If water is wasted, the city must spend more money to pump water, and this means that the city will have less money to spend for schools, parks, clean streets, and police protection. Wasted water means less of other things for the community.

The same result follows in a different way if the city collects larger taxes from the citizens in order to get money to pump more water; when the citizens pay more money for taxes, they have less to spend for other things.

Sometimes the city puts meters into the houses and measures the amount of water used and then charges according to the actual consumption. This reminds people that they must pay for the water used and makes them more careful. It is well to be reminded that it is a mistake to waste water, or anything else, for that matter.

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LESSON C-4.—PETROLEUM AND ITS USES.¹

It was a November day in 1862. In a home on the Illinois prairie an excited family group was gathered round the father, who had just returned from the near-by city. To all the questions they had asked about the contents of the package which he carried, he had made mysterious answers. It was dusk and one of the boys suggested lighting the candles, but the father said his gift would look better in the dark. What could it be? They were asked to stand back from the table as he began to unwrap it. "Don't touch it," he said. "You see, it is of glass, and tall. You might tip it over." He struck a match, touched it to the wick, fitted on the chimney, and the room was illuminated as it had never been before. "A kerosene lamp!" the children exclaimed, for they had heard about this invention and had been eager to see one. Now they actually owned one.

SUBSTITUTION OF PETROLEUM FOR ANIMAL OILS.

It is difficult for those of us who are accustomed to living in a petroleum-using world to realize how the use of petroleum products has changed life since the middle of the last century. Up to that time people who lived outside of the cities which were illuminated by natural or manufactured gas had to depend entirely on vegetable and animal oils and fats for light. Tallow and sperm candles were tedious to make and gave poor light. Whale-oil lamps were little better.

Not only lighting, but lubricating, depended on animal and vegetable oils. Whale oil was the most important of lubricating oils, and by 1850 it had become very expensive because of the scarcity of whales. Sometimes a whaler had to spend two or three years in the northern seas before obtaining a full cargo of oil. As a result it was sold at \$2.25 a gallon. Even this expensive oil was unsatisfactory in many ways. It sometimes gummed badly and at other times it formed an acid which injured the metal of the machinery. The finding of petroleum in abundance, together with the discovery of ways of refining it, relieved the anxiety about the future supply of whale oil and gave people a substitute that was much cheaper and better. Before long the whale-oil industry and the making of tallow candles almost disappeared.

¹ Prepared by Edith P. Parker, teacher in the University of Chicago Elementary School.

This lesson shows how dependent we are on natural resources and on invention. It also shows the necessity of intelligent conservation of a natural product.

INVENTION OF REFINING PROCESS.

It was really not the discovery of petroleum itself, but the discovery of a way of refining it that made it suddenly important about 60 years ago, for petroleum in its crude form has few uses. It is an oily liquid, commonly thick and dark brown in color, but in some cases thin and in some cases light. It always has a strong disagreeable odor. Early colonial settlers knew of the existence of petroleum from the Indians. From them they learned to use it for medicine, especially as a liniment for rheumatism. For this reason it was first called Indian or Seneca Oil. A few natural springs supplied all that the settlers needed for this purpose.

In 1807 pioneers who were digging wells for salt in western Virginia were distressed because great quantities of this bad-smelling useless oil flowed into their brine wells. Attempts were made to use it to burn for lighting purposes, but it gave a smoky flame and a disagreeable odor when burning and was considered worthless.

In 1846 a man named Gesner distilled from coal an oil that burned well in lamps. Following his example, but using crude oil instead of coal, Samuel Keir, a Pittsburgh druggist, finally succeeded in distilling from petroleum a fairly satisfactory oil for lamps. As soon as this became popular, there was a sudden demand for petroleum.

THE FIRST WELL.

The next problem was to raise to the surface the supply of oil that was underground. In order to understand this problem we must know how petroleum occurs. It is found stored in the pores of porous rock which is overlaid by nonporous layers. If there were no impervious cover above the oil-bearing rock, the oil would rise to the surface and escape by evaporation. This probably has happened in many places. A cover of fine-grained rock makes an oil reservoir of the porous rock.

To reach the oil supply one must drill through the overlying layers. In 1859 the first oil well in the United States was drilled near Oil Creek in Pennsylvania by "Colonel" Drake, a former

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1. What is the lighting system in your own home?
 2. How are the streets of your town lighted?
 3. How many kinds of lighting systems for a home do you know? How many for a city?
 4. What is the expense per month of operating the lighting system in your own home?

railroad conductor. After many discouraging attempts to reach the oil-bearing rock, he left his well one Saturday night thinking that the rods of his drill were broken because the drill went down so easily. When he returned on Sunday morning, he found his well full of oil. The drill had gone down easily because he had struck the oil-bearing layer.

EARLY PROBLEMS OF THE INDUSTRY.

Following his discovery, a Pennsylvania oil rush, resembling in many ways the California gold rush 10 years before this time, occurred. Many fortunes were made. Many were lost. Hundreds of oil wells were dug.

For the first 10 years there were many difficulties to be met. Oil was produced faster than it could be used and much was wasted. Methods of producing the oil and of refining it were very imperfect. The kerosene produced was often not safe because it contained too much highly inflammable naphtha. Explosions, fires, and deaths resulted. Methods of transporting the oil were also crude. Gradually, however, these difficulties were overcome, many new uses were found for petroleum products and it has become so important that some of the recent stories of petroleum are entitled, "Petroleum the Advance Guard of Civilization"; "Petroleum as a World Power"; "Petroleum, the Motive Power of the Future"; "The Oil Conquest of the World," etc.

A PETROLEUM REFINERY.

A petroleum refinery of to-day is a modern magic house where the sticky, dirty-looking, bad-smelling oil is transformed into more than 200 useful products. Many of these products are known by everybody to be made from petroleum; others are common but are not known to most people as petroleum products.

When crude oil is heated slightly, some compounds contained in it are turned to a vapor. If the oil is heated to a greater degree, other compounds are vaporized as the temperature rises. In this way it is separated into lighter and heavier compounds. The process is called distillation.

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5. Can you discover any means of reducing that expense and still be served as well as you are now?
 6. Can you find out what is the expense of lighting your city?
 7. How is this expense met?
 8. How many vegetable and animal oils can you name?

The crude oil is placed in large iron stills or tanks. Each still is commonly about 40 feet long and 15 feet in diameter and holds from 500 to 1,000 barrels of oil. There are many stills in one refinery. The oil is heated in some instances by fires built underneath the tanks, and in others by pipes through which steam is circulated.

Two products vaporize at such low temperatures (32° F., and 62° F.) that they are usually allowed to escape. They have the unusual chemical names cymogene and rhigolene, and are used in hospitals as petroleum ether.

The next compounds which pass off as vapor when the temperature of oil is raised are the inflammable oils, such as gasoline, naphtha, and benzine. These substances in vapor form pass through coils of pipes against which a constant stream of cold water flows. As the vapors cool they condense and pass into receiving tanks. Through transparent windows in the pipe a worker, called a "stillman," watches the condensed liquid very carefully, tests it, and sends it to the receiver in which that particular product belongs.

As more heat is applied the oils known as illuminating oils, chief of which is kerosene, are vaporized, and they are condensed in the same manner as the lighter oils. Usually the products of distillation, the gasoline and kerosene, receive further chemical treatment in order to rid them of impurities before they are put on the market.

There is then left in the still a residue of unevaporated oil. It contains the heavy lubricating oils. This residue is first chilled and that part which makes paraffin solidifies. The rest is then compressed in order to drive out the loose oil, and that which is left after the oil is squeezed out is treated with chemicals until all the products are extracted. It is from this residue that the majority of the 200 petroleum products come.

THE USES AND VALUE OF BY-PRODUCTS.

When we consider the uses of all the products which are secured from the residue, we can easily explain the great importance of

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9. Find out what a whale oil lamp looked like.
 10. Why was this kind of a lamp poor in light?
 11. What is the difference between fat and oil?
 12. Why does petroleum float on water?
 13. Why does it calm water?

petroleum. In the first place, almost all the machinery of the world is oiled with it. Without lubricating oils it would be quite impossible to run machines at the rate that is common these days in all factories. The bearings would soon get hot. Lubricating oil is as necessary as power. Try to think what it would mean if nine-tenths of the world's machinery ceased to work. It would affect the food we eat, the clothes we wear, the books we read, the furniture we use, the houses we live in—in fact it would affect our whole mode of living. It would force us to live as simply as our ancestors of hundreds of years ago. While the part of oil in operating machinery might seem to be unimportant, the distress that would come to us if the oil supply were exhausted is unlimited.

USES FOR POWER.

Try next to picture to yourselves what would happen to our present means of transportation if we had no gasoline. We could not have automobiles which use gasoline as fuel. We could not have aeroplanes. In the days of our grandparents, the gasoline group of petroleum products was thrown away as waste. Now we use one billion and two hundred fifty million gallons annually. We are beginning to study means of increasing our supply and of substituting other materials for gasoline wherever practicable. Inventors are trying to make it possible to use kerosene carburetors. Already paraffin tractors are in use. Since kerosene is now less in demand than gasoline, any change which would allow us to use it in place of gasoline is helpful.

USE AS FUEL.

Petroleum is also used as a fuel in factories where a fierce, quick, evenly maintained heat is necessary. Some furnaces are now built so that oil is burned instead of coal to heat the hot water or make the steam which heats the radiators. Both gasoline and kerosene are used in stoves for cooking and heating purposes.

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14. When the people of the United States knew about petroleum for so long, why was it so late before they made use of it?
 15. Where would you look in an oil region for oil?
 16. Explain why men who were ignorant of the probable location of oil lost their fortunes in digging for it.

The use of kerosene for lamps has been mentioned. In some places oil illuminating gas is produced from petroleum. In many rural sections oil is used in road making. It is sometimes used in street sprinklers instead of water because it does not dry up as water does but keeps the dust down for months, making a hard, smooth roadbed.

OTHER USES.

Think of some of the other uses of petroleum products. Great quantities of gasoline are used by the clothes-cleaning establishments of large cities. Petroleum by-products are used to kill insects, to protect animals from flies, to preserve timber from decay and destruction by insects. One can see from the uses already named that petroleum affects practically all industries and all commerce.

There are other uses made of the by-products. From the residue left in the still, vaseline, chewing gum, and wax are made. We are all familiar with the uses of vaseline. Many salves and ointments which one buys at the drug store are petroleum products. We are also familiar with the use, or rather the misuse, of chewing gum. Wax has replaced tallow for candles. One's birthday and Christmas celebrations depend in part on petroleum products. The smooth, sleek, look of the cotton goods in dresses is due to the wax used in finishing the cloth. Wax is used in making perfumes, manufacturing matches, ironing clothes, preserving fruits, and many other industries. One can not help wondering how the people of 75 years ago lived without petroleum. Their wants had to be simpler than ours. Our wants are many because we have become accustomed to the uses of all these products of petroleum.

TRANSPORTATION OF PETROLEUM.

The transportation of petroleum presented a difficult problem. At first it was put in wooden barrels and loaded on wagons, trains, and ships. Very soon, however, the experiment was made of piping the oil from the wells to the refineries. This proved so successful that thousands of miles of pipes have been laid. The

17. From pictures of oil wells, or from those which you have seen, describe the appearance of the structures above ground.

18. Among the instructions given to the children described in the first paragraph of this story was the direction to fill the lamp only partially full? Why was this good advice in 1862? Why not necessary now?

19. What oil-producing region is nearest you?

pipes are commonly 6 or 8 inches in diameter and are near or on the surface of the ground. Oil does not freeze as water does, therefore the pipes do not have to be laid far underground. Engines are placed at regular intervals along the line to pump the oil through the pipes. This saves the work of loading, unloading, and carrying.

After oil leaves the refinery, the problem is not so simple because it must be separated into small lots for many destinations. In some cases it can be piped from refineries to the warehouses of large wholesale dealers. For ocean carrying, large tank steamers have been constructed. Smaller whale-back oil tankers ply the lakes and rivers. Oil tank cars are used on railroads. At convenient places over the entire country distributing stations are established from which oil is carried to small towns and country districts in tank wagons. This system of tank carriers prevents much waste of time, oil, and labor.

THE PROBLEM OF CONSERVATION.

The disturbing fact about petroleum is that the supply can be exhausted. Once exhausted, it can never be replaced. Its formation required ages of time, as did the formation of coal deposits. When we realize the fact that the supply of so useful a product as petroleum can not be renewed, we see the necessity of making the very best use of what we have and of preventing waste of any kind.

In the early days when the first wells were dug a great deal of oil was wasted because of poor construction and lack of facilities for storing.

A second great source of waste is overproduction. When oil is found in a region, wells are put down in great numbers without considering whether or not oil is demanded in such quantities. When it is produced faster than it can be refined and used, it must be stored. While in storage, it is wasted by evaporation, by leakage, and often by fire. Wise laws have been passed in some States to prevent waste of these kinds.

20. From your geography name the great oil-producing regions of the United States.

21. Which of these is at present the most important?

22. Which was the last to be opened up?

23. What effect do you think the finding of oil in a region would have on the peopling of the region?

The wise use of petroleum is quite as important as the stopping of all waste. We ought to make the most of our natural petroleum supply. Some people get the idea that conservation means not using natural supplies. We ought to understand, on the contrary, that wise use is the best conservation. We have a right to use petroleum, but we must use it carefully. Certainly it is legitimate to use petroleum in lubricating machinery. It is right to use it for illuminating where gas and electricity are not to be had. The use of by-products is entirely proper. The use of oil for roads and as fuel in steam engines is very doubtful and probably ought not to be permitted. In our war vessels it is a measure of national defense to use oil because greater speed can be obtained and a wider field of action permitted. For fuel in other ships, on trains, in furnaces and factories, we should set down, as against the present advantages obtained from using it as a fuel, the disadvantages of a future shortage of lubricating oils. In such a comparison, we must remember that we have a number of satisfactory fuel substitutes, especially coal.

It is true there will be additions to our supply, because new fields are constantly opened up. Recently science has shown us how to secure a great deal of oil from the oil shales of the Western States. Already a great shale oil industry is established in Scotland. These possibilities lengthen the period of abundant supply, but exhaustion must eventually come. How long the natural supply will last depends largely on how careful we are in using our supply in the most efficient ways, and how successful we are in preventing waste.

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Chapter II.

PRODUCTION AND WISE CONSUMPTION.

The first thing that is necessary for the welfare of mankind is, of course, that the goods required shall be produced in sufficient quantities. The thing next in importance is that those goods be used carefully, so that none will be wasted. Waste means the loss of the value of the goods wasted and of the human energy used to produce them, but that is not all. It means that other people who need these goods, perhaps far more than we do, will not have an opportunity to use them.

It is often hard to understand how the waste which seems unimportant to us can be important to anybody else. If we do not use two or three slices from a loaf of bread the loss is so little that we are apt to pay no attention to it. But every family uses a great many loaves in the course of a year, and there are many millions of families in the United States. A very little waste in each loaf they use would amount very soon to the loss of a carload of wheat flour. A great many carloads will be lost if the waste continues. And now when wheat is so hard to get in Belgium and France, and in the other countries which are fighting on our side in the war, the loss of so much of it is a very serious matter to the people whom we ought to help.

In the early days of this country a large part of the land was covered with magnificent forests. Farmers frequently burned off large areas in order to cultivate the land. When a field was "worn out" they "cleared a piece of new ground" because that was easier than to maintain the fertility of the old fields. They had wood in such abundance that they could not foresee that in a few generations the scarcity of timber would become as serious as it has now become, and they wasted it in great quantities.

In this generation our attitude toward coal is like that of our forefathers toward the forests. The coal supply seems endless; we have mined it wastefully and we have used it lavishly. The cost to us is little, and we do not realize that those who will live here after we are gone must suffer for our waste. The troubles that have been felt during the war in getting men to mine enough coal and in having enough of it hauled to our homes and factories have compelled us to be more careful in using it. The lessons we are learning will be good for us and for posterity. We are beginning to understand the meaning of conservation in the natural resources of the Nation, and of economy in our personal affairs.

LESSON C-5. CONSERVATION AS EXEMPLIFIED BY IRRIGATION PROJECTS.

By CHARLES A. McMURRY, professor at the George Peabody College for Teachers.

Whenever nature fails to give soil and sunshine and water in the right proportions, man must try to work out some way of supplying what is needed. When a dry period comes in a region ordinarily supplied with water by rainfall, gardeners, to protect themselves against loss, sometimes water their fields from tanks or reservoirs by means of ditches, or they have overhead pipes which spray the plants in the field. In cities and towns, during

hot, dry weather, people often water their lawns and gardens. Farmers, whose fields are too large to be watered, try to preserve the moisture in the soil by frequent plowing or harrowing which pulverizes the top layer of earth and thus prevents evaporation. What is done on a small scale in the regions where rain ordinarily supplies moisture must be done on a large scale in regions that are naturally too dry, if man is to live and raise crops in such places.

IRRIGATION PROJECTS.

In the western part of our country there are broad areas where the rainfall is very small. In most of these areas the soil is fertile and the sunshine is abundant. Man has pushed forward into these unpromising regions and by his own efforts has helped to readjust natural forces until they serve his purposes.

In recent years the Government of the United States has undertaken a number of great projects for irrigating large tracts of arid land in the West. During previous years many irrigating ditches had been taken out along the rivers of arid States by farmers and private ditch companies, but some of the great reclamation projects required such a vast outlay of money that private companies could hardly undertake them. One of these, the Salt River Project, will be described.

SALT RIVER VALLEY.

The Salt River comes down from the slopes of the White Mountains in Eastern Arizona. Before joining the Gila River, its valley widens out into a flat, gently sloping plain, girt in with mountains. This broadened portion of the valley is very dry and hot, but it has a productive soil, and, when supplied with water produces abundant crops. A little farther down the valley are the cities of Phoenix, the capital of Arizona, Tempe, and Mesa.

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1. Why are the western plains arid? What is the average rainfall in your part of the country?
 2. What does man do when soil or sunshine is not adequate for his needs?
 3. What cases do you know of where natural resources have been improved by draining swampy land? By filling in lakes or bays?
 4. Give as many causes as you can for floods. What other wastes than the waste of water do they cause?
 5. Name at least 10 other projects for the benefit of the community which the Government manages.
 6. What other rivers depend upon melting snow for their supply of water?

The Salt River in early spring has usually a good water supply. The White Mountains from which its head waters spring are high enough to receive heavy snows in winter brought by the regular moist winds from the Pacific. In the warm sun of early spring, the snows which have accumulated to a depth of many feet melt away and fill the valley with floods. But these floods pass off down stream, and in the middle and late summer little water is to be had. The first great problem was to store up the flood waters and hold them in check till needed for irrigating the dry lands of the valley during the remainder of the year.

LOCATING THE DAM.

The Government engineers of the Reclamation Service made a careful survey of the Salt River Valley—its sources in the mountains including its tributary streams, its spring floods, annual discharge, climate, forests, and other resources. About 62 miles up the valley from Phoenix is a spot where the river has cut a deep gorge through the mountains. At this narrow place they could build a dam which would create a lake 25 miles long and from 1 to 2 miles wide in the valley above. Once filled with flood waters such a lake would supply a large reserve for purposes of irrigation. They decided that this was an excellent place to try out an irrigation plan on a large scale.

PROBLEMS OF CONSTRUCTION.

The site of the proposed dam, which was named the Roosevelt Dam, was in the midst of a rugged mountainous region, far removed from roads and very difficult of approach with supplies.

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1. What do engineers do when they make a survey?
 2. When nature forms a lake, are the conditions similar to those described in this lesson?
 3. Before the dam was started, much preliminary work had to be done. Is this true of the making of a pair of shoes? Did the Indians do much preliminary work before making their bows and arrows? Why do we do so much preliminary work these days?
 4. What is an Indian reservation? Where are they to be found? Why do we have them?
 5. Tell of other cases where men can produce more when they are well fed and properly trained.
 6. Why were these cities in Arizona willing to build the road? Who ordinarily pays for roads?
 7. What kind of region is best for building a dam?

Before beginning the work on the dam it was necessary to construct houses for the workmen, gather tools and supplies, provide men and machinery, and to establish roads and telephone connections with the outside world.

An easy, substantial road connecting Phoenix with the settlement at the dam had first to be provided. The cities of Phoenix and Mesa raised by subscription \$71,000 for the building of this road. It was laid out through a very difficult mountainous country, along the steep, rocky sides of the river gorges. Its scenery is wild, like that of the great river canyons of Arizona. The Apache Indians came in from their reservation and offered to help in its construction. At first they were not strong and skillful workers. But when well fed and trained they proved efficient workmen and were paid the same wages as white men.

In the construction of the dam a large amount of cement and concrete material was needed. The cost of hauling this material from Phoenix, after being shipped in from a distance, proved so great that a cement mill was built near the dam where cement-making material had been found. An immense amount of lumber and wood was required for the scaffolding and cement forms used in the dam construction, and also for bunk houses and other structures in the village of Roosevelt near the works. On the mountain slopes nearby forests of pine were fortunately growing. Sawmills were erected for supplying wood and lumber. An electric plant was erected to furnish power for the cement mill, for the machines used in dam construction, and for later pumping in the valley below.

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1. How is concrete made? What is the "form" used in cement construction?
 2. What kinds of water wheels are there? In finding the answer to this question be sure to find out about turbine wheels.
 3. Why did construction on the Roosevelt Dam begin in the spring? Name other tasks which must be undertaken at some particular season. What is a seasonal industry?
 4. "Wages must be high in seasonal industries to induce people to enter them." Why?
 5. What kind of river is spoken of as having considerable water power? Who owns the water power in a river? Name some great water-power plants.
 6. How can water produce electrical power?
 7. Why are there not electrical plants at waterfalls in regions occupied by uncivilized people?

The work of constructing the Roosevelt Dam was begun in the spring of 1905. To insure a safe basis for the foundation it was necessary to dig down to solid rock and to anchor the ends of the dam deep in the sides of the rocky cliffs. It seemed as if the river had made up its mind to prevent the work. Flood after flood came tearing down the valley, sweeping away all the work of the contractor and his men.

During the construction of the dam the water from above was let through a tunnel cut in the solid rock around the end of the dam. Since the construction of the dam also water is let out from time to time through a tunnel into the channel of the river below.

THE MAGNITUDE OF THE PROJECT.

The Roosevelt Dam is 280 feet high and about 1,080 feet along its top, where a wagon road was built. It is in the form of a semicircle arched upward toward the stream for great power of resistance. The dam has a very broad foundation and tapers gradually toward the top. At each end near the rock cliffs are spillways where the flood waters can escape when the lake is overfilled. The dam contains about 340,000 cubic yards of masonry, in which 25,000 barrels of cement were used. By constructing its own cement-making mill, the Government saved more than \$500,000 for the people who were to use the irrigated lands, since they, in time, must pay back the costs of construction to the Government.

About 40 miles below the Roosevelt dam it was necessary to construct a second dam, called the Granite Reef or diversion dam. The waters raised by this dam are diverted from the river channel through large canals to the thousands of acres of valley land which are to be irrigated. The Granite Reef Dam is 38 feet high and 1,100 feet long, and cost half a million dollars.

1. Notice that the dam is in the form of a semicircle arched upstream. What other constructions do you know of in which the same principle is applied?

2. Why was the diversion dam necessary?

3. What other kinds of reservoirs can you name?

4. Nature is a storehouse (*a*) of materials, (*b*) of forces. Give as many illustrations of each as you can. Do not confine your illustrations to the subject matter of this lesson.

5. What can you find in your town to compare with the Roosevelt Dam in height? In length?

The water held in reserve in the large lake 40 miles above can be let out from time to time at the Roosevelt Dam. Thence it flows down the river channel to the diversion dam, where it is diverted to the canals for irrigation. The lake reservoir above the Roosevelt Dam has a capacity for holding in reserve 1,300,000 acre-feet of water. (An "acre-foot" is the amount of water required to cover an acre of ground a foot deep.) This reservoir at the time it was built was one of the largest artificial reservoirs in the world.

The amount of good land in this tract that can be directly supplied with water from the river that is controlled by the Roosevelt Dam is about 160,000 acres, but altogether there are about 220,000 acres that might be irrigated if the supply of water were sufficient. So the engineers took advantage of a further supply of water that came into the Salt River below the dam. The Verde River flows into the Salt River between the Roosevelt Dam and the diversion dam, and the two streams combined are expected to furnish enough water for about 220,000 acres.

Good irrigated land, well located, is worth \$100 an acre or more. Some fruit lands are sold at \$1,000 an acre. The same quality of and without water is worth not more than five or six dollars per acre.

IRRIGATION DITCHES.

The farm lands between the main canal and the river are irrigated by drawing water from the main canal. At various points along the main canal concrete gates or take outs are inserted in the banks by which water is turned into lesser ditches or laterals and led directly to the fields. From the larger laterals by similar devices the water is turned into small ditches and brought to the individual farms. The location of these distributaries is fixed by the contours of the land. The amount of water and the size of

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1. How can the amount of flow through a pipe or a ditch be measured?
 2. What is the value of land around your home? Does the value of land ever depend upon location, upon climate, upon fertility, upon its elevation, upon contributions man has made?
 3. It was said in the lesson that the people on the land were to pay for the dam. How would this be brought about? In a city, how are improvements that increase the value of land paid for?
 4. Since the people ultimately paid for the improvement mentioned in the text, why should the Government do the work? Why not have a private company do it all and charge the farmers for the water?

the sluice box are determined by the number of fields or farms to be irrigated from an outlet. Sometimes the lateral ditches are 6 or 8 feet wide and a foot or two deep, and again they are small, being not more than a foot or two in breadth.

Because water is scarce and none should be wasted, it is necessary to regulate carefully the amount let out and the times of opening the lateral ditches. Water masters are appointed by the Government, whose business it is to make regular rounds of inspection of the ditches and to control the use of irrigation waters. For private systems the legislatures of the different States have passed many laws regulating the construction of ditches and the water rights of users. The charges for water are usually based upon the quantities used, and this develops economy in use.

METHODS OF WATERING CROPS.

A field is usually supplied with water from a single ditch which enters at the highest point and skirts the upper edge of the field. From this the water is drawn off in furrows between the rows of potatoes or fruit trees, or, in the case of grain or alfalfa, the whole field is flooded until the soil is well soaked. The water is then turned off for a week or two till a second watering is required. A farmer must show great care in preparing the levels and slopes of his fields, in laying off his ditches so as to get the best flow of water without wasting it and without wasting the soils. During the season of cultivation the farmer is busy all day long and often at night opening and closing his ditches and regulating the flow of water upon his fields.

PUMPING WATER FOR IRRIGATION.

Some of the lands which lie beyond the reach of the irrigation ditches are supplied with water from wells. The electric power generated at the dam and at drops on the main canal is used to pump the water from these wells. The same water can be used first to produce electric power and afterwards for irrigation.

1. Why should the Government have water inspectors in the case mentioned in the text? What other kinds of inspectors can you name? Do private companies ever have inspectors?
2. In what way could a farmer waste soil during irrigation? Can soil be wasted on farms where irrigation is not used?
3. Work out the definitions of these terms: Reclamation, irrigation, conservation. Cite other cases of reclamation, irrigation, and conservation than those mentioned in the text.

OTHER PROJECTS.

There are a great number of other projects of the same type as this at Salt River. In Nebraska and Wyoming the North Platte River irrigates a large area in both States. Farther west the Grand and other streams, coming down from the high Rockies, water many broad valleys of western Colorado and Wyoming and Utah and Washington. The Snake River, in southern Idaho, and the Shoshone River, just east of Yellowstone Park in Wyoming, supply the water for important projects.

These examples must suffice for the purposes of our present study. They could be supplemented by a long list of similar projects in which our Government is engaged.

MEANING OF CONSERVATION.

We speak of such projects and others of like kind through which man is making better use of the forces of nature as "reclamation projects" or "conservation projects." The word "conservation" does not mean, as people sometimes think, that the gifts of nature are to be locked up and withdrawn from all use. Nature should be used to supply human needs. The more intelligence people have the more wisely will they use nature's resources to develop their civilization. To conserve a water supply means to find it, store it in reservoirs, and distribute it where it will do the most good. To conserve coal and iron and other minerals is to use nature's supply to the best possible advantage. To conserve a forest means to cut trees when they have reached the proper size and to provide for their replacement by planting new trees. In short, man's conquest of nature is most complete when he uses nature as fully but as wisely as possible.

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LESSON C.-6. CHECKING WASTE IN THE PRODUCTION AND USE OF COAL.¹

Coal is so important for factories and homes that it has been called the "king of mineral products." Along with iron, it plays so large a part in modern life that one writer has prophesied that those nations which have an abundant supply of these two materials will rule the world.

Try to picture to yourself what would happen if the coal supply were suddenly cut off. The steamers on the oceans would have to be turned into sailing vessels or their engines converted into oil burners. Engines on our railroads would stand still. The machinery in factories would stop and our homes would be cold and uncomfortable. We have come to depend on coal almost as much as we depend on food.

IMPOSSIBILITY OF REPLACING COAL.

We should be a fortunate nation if our supply of so useful a product could never be exhausted or if we knew some method of making more. Anyone who has studied the story of coal, however, knows that its formation required long ages of time and conditions which man has no power to bring about again. We know no means of ever replacing our supply.

Moreover, coal differs from iron, tin, copper, and other metals, in that its use means its destruction. The iron that is used in the manufacture of a stove, for example, can be sold for scrap iron and used again when the stove is worn out. When coal has been burned, its usefulness is ended. Nothing remains but the ashes.

THE SUPPLY.

The amount of coal in the United States has recently been estimated to be over four and one-half trillion (4,500,000,000,000) tons. This amount is so great that it is almost impossible to picture it.

If all this coal were brought together it would make a great block 272 miles long, 10 miles wide and a mile high. We may feel reassured, therefore, as to the amount of coal in the country. We have an enormous supply, much greater, so far as now known, than that of any other nation.

¹ Material for this lesson prepared by Miss Edith P. Parker, teacher in the University of Chicago Elementary School. The lesson is designed to teach that conservation means intelligent use. Coal should be used, but used carefully and without waste.

THE RATE OF PRODUCTION.

The rate at which the United States has produced coal has increased very rapidly since 1870. This year we shall probably produce more than 600,000,000 tons. This amount seems very large indeed when we think of it in freight cars or when we compare it with the amount of coal produced in other countries in a year, but it seems very small when we compare it with our total supply of coal. If you mark off on squared paper 10,000 little squares to represent the total amount of our coal, you can represent this year's production approximately by coloring one little square and four-tenths of another. This means that at the present rate of use, our supply will last over 7,000 years. If we use an increasingly larger amount each year, it will not last so long. If we use less, it will last longer. The matter of exhausting our supply is clearly not one to cause immediate concern, though the fact should not be overlooked that we are rapidly using up the most easily accessible supplies.

MEANING OF CONSERVATION.

No one can reasonably argue that we ought to give up the use of coal. We have a right to use it and to make it help us in developing our civilization. On the other hand, we must not waste it. The true meaning of the word "conservation" is wise use. We should learn how to use coal efficiently, avoiding waste.

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1. Name the purposes for which coal is used in your town.
 2. Show what effect the cutting off of the coal supply would have on the growth of cities.
 3. Review the story of the formation of coal and explain why the supply can not be replaced.
 4. Show why the use of coal has increased so rapidly in recent years.
 5. Do you think it likely that in future years an even larger quantity will be used?
 6. How much space is occupied by a ton of broken coal? In answering this question find out also the answer to the question: How many different kinds of coal are there? You can probably get the answer most easily by visiting a coal yard.
 7. What other products of nature need to be carefully conserved?
 8. The demand for conservation has been made more since the war began than ever before. Explain why a war should increase our attention to the needs of conservation
 9. What are the particular kinds of conservation that have been urged upon us by the war?

WASTES IN PRODUCTION.

The way in which coal occurs in the earth is responsible for some of the waste of which men are guilty. Coal layers differ greatly in thickness and in quality. It is a temptation, so long as coal is plentiful, to mine the thicker or better layers and leave the thin, shaly ones. There would be no harm in this if the neglected layers could be mined later. Often, however, the poorer layers lie above the better ones, which are mined first. The earth sinks after the abandonment of the lower workings and the upper layers of coal are so broken that they can never be worked. This waste could, of course, be prevented by mining the upper layers first.

In many coal mines there are rooms that have been made by digging out the coal. There is always danger that the roof of such a room will cave in because of the great weight of overlying rock and earth. To prevent this, pillars of high-grade coal are left standing. Sometimes, too, a roof of coal is left. When this "room and pillar" method is used, much good coal from the better layers is never taken from the ground. There is another method, known as the "long wall" method, where the miner supports the roof behind him as he works by filling in rock and shale. In this way all the coal is taken out.

Another great waste occurs when coal is "shot off the solid." A deep hole is bored into the coal face; an explosive is put into the hole and fired. In this way large blocks are broken off without much labor, but a great deal of slack or very fine coal is produced.

1. Draw a diagram showing what is meant by the paragraph on the different layers of coal and indicate what happens when the coal is mined in a wasteful way.

2. If pillars of coal are not left standing in the rooms, what can be done to make it possible to take out all the coal.

3. Any change in the way of mining the coal is likely to cause additional expense. Is it better that we should save this expense or save the coal?

4. Why should explosives be used in the mining of coal?

5. Are there any other kinds of excavation that make use of explosives?

6. One kind of waste of coal which has not been discussed in the text is the waste in transportation. How far does the coal have to travel which is used in your town?

To lessen this waste, cutting machines have been devised. They are worked by electricity or by compressed air. A chain having teeth somewhat like those of a saw makes a deep cut under the coal, which is broken down by smaller charges of explosive. The breaks are cleaner, the blocks more regular, and less slack is produced by this method.

WASTE OF HUMAN LIFE.

While we are talking about not wasting coal, we should not forget that it is more important that the people who are getting the coal out of the mines be protected. It would be a more serious form of waste to neglect the miners.

Ventilating devices are necessary in a mine in order to supply fresh air for the men at work. The better the ventilating scheme, the less the waste of human health. Disastrous floods occur in some mines. Cave-ins are another source of danger. The greatest loss of life in coal mines is due to falls of roof, gases, explosions, and fires. To prevent the fires and explosions, miners use safety oil lamps. In many cases these have been replaced by electric lamps fed by small storage batteries carried on the back. Safety lamps, careful, frequent inspection and the use of the most improved machinery go far in reducing the dangers of a mine and so lessen the waste of life. Many States safeguard their miners by laws insisting upon good working conditions and reasonable hours of work. It is quite as important to the Nation to save the lives of its people as to prevent the waste of materials.

1. Why are electricity and compressed air useful in working the machinery in a mine?
2. Find out what is meant by "fire damp" in a mine.
3. Show why it is dangerous.
4. Describe the safety lamp used by miners and show how this lamp reduces the danger.
5. Why is an electric lamp even safer? On the other hand, why is it more difficult to supply miners with electric lamps?
6. Mining companies are always anxious to prevent accidents in their mines. Why, then, is it necessary to pass laws compelling them to make inspections and to put in safety appliances?
7. In what other ways besides passing laws does the community express its demands in this matter?
8. What other occupations are hazardous?
9. What effect does it have on wages when a man works in a mine or factory where he is in danger?

PROBLEMS.

In considering the prevention of these wastes of material and life, we must remember that it costs more per ton to mine coal in thin or shaly seams than in thick ones. It also costs a great deal to make a mine safe and healthful for the miners. Improvements are always expensive to install. In some cases the benefits gained more than pay the owner for the expense of making the improvements. In other instances, mine owners can not afford to put in the modern devices unless they raise the price of coal at the mine. If the price of coal is raised, the whole community is called upon to share the expense. When States pass laws, therefore, dictating the conditions under which the work is to be carried on in mines, they are in reality taking a hand in business. Or to put the matter in another way, prices and conditions of life and our laws are all very closely related to one another.

As a rule, small mines are less able to afford the better and safer methods than large ones. Many in our country are too small to be able to afford modern equipment. Moreover, there are more mines open than we need. If every mine in our country were kept working all the days of the year, we should have more coal than we demand. Many mines are idle part of the year. It is expensive to keep up an idle mine. When we pay for coal delivered at our door, we pay our share of the cost of maintaining these idle mines. This is wasteful.

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1. What is the price of coal in your town?
 2. Can you find out what this coal costs as it is produced at the mine?
 3. The Government has recently taken action fixing the price of coal at the mine. Why did the Government do this?
 4. Did this affect the price of coal as it is sold to families?
 5. How much coal is used in heating a schoolhouse? In answering a question of this kind it is of course important to take into consideration the size of the building. In financial reports the statements are generally made so as to show how much coal is used in heating each cubic foot of the space inside the building. Reduce your answer about the school building to this form.
 6. Who pays for the coal that is used in a school building?
 7. It is sometimes said that the person who uses an article which is made in a factory has to pay the coal bills of that factory. In what sense is this true?
 8. The statement which is made about large mines as compared with small ones is true in general of all kinds of business. Can you find illustrations that show how business concerns have consolidated so as to make more profit?

WASTE IN USING COAL.

A great part of the waste of coal comes after it is mined. Low-grade coal and slack were formerly burned at the mouth of the mine as useless. Some slack is produced even when the best known methods of mining are used. If it can be economically used, it saves the better grade material for other purposes. Many plants have been equipped for using it. One eastern company is successfully using this low-grade coal near the mine to make electricity for use in a neighboring city.

Europeans have solved the problem by making "briquets" or bricks of a mixture of slack and coal tar. These briquets make good fuel. Minnesota, New York, New Jersey, Pennsylvania, and California have briquetting plants, and we shall doubtless see a fuller development of this industry.

WASTE IN MAKING COKE.

Coke is the solid material which is left when coal is heated in a closed chamber or oven. It is used in the manufacture of steel. Coal tar, gas, and ammonia are driven from the coal as it is heated. The older ovens were called, because of their form, beehive ovens. The newer and better ones are called retort ovens.

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1. The countries of Europe are far less wasteful of low-grade coal than is the United States. Why should this be so?
 2. In recent years coal companies in Pennsylvania have found it profitable to work over the culm piles which they formerly threw away as pure waste. What does this fact show about the difficulty of mining coal at the present time as compared with earlier times?
 3. What is the advantage of making electricity at the mine rather than distributing the coal to the people of the neighboring city and allowing them to make their own electricity?
 4. What are some of the ways in which a family wastes coal?
 5. Waste sometimes results from the use of luxuries. What do you think of the use of coal for making electricity for electric signs used in advertising?
 6. Why is it difficult to use the ordinary river for water power?
 7. Find the description of some of the large water-power dams in the country, for example, the Keokuk Dam in the Mississippi River.
 8. The Government often takes control of the water power of a region and develops it. Show why the Keokuk Dam could not be controlled by a private corporation.
 9. Does the Government own and lease any coal lands?

It has been shown that the retort ovens make from the same amount of coal one-tenth more coke than the beehive ovens. The newer ovens can also use a poorer quality of coal. The coke which results is better in quality and all the by-products, such as coal tar, ammonia, and gas, are saved.

In spite of all the arguments in favor of retort ovens, two-thirds of the coke made in our country last year was made in beehive ovens. Germany, France, and Belgium use retort ovens altogether. Two-thirds of the ovens in Great Britain are of the retort type. When beehive ovens are already in use, owners feel that they can not afford to throw them away and put in a new kind.

WASTE OF COAL AS FUEL.

One of the great wastes of coal comes from poor firing. Coal burns properly only when the right amount of air is introduced into the furnace or stove and when coal is put on the fire in proper quantities and on the right part of the grate. When all the conditions are as they should be, the greatest amount of heat possible from the given fuel is obtained and smoke is done away with. Smoke usually means imperfect burning.

Apart from the waste of fuel, there is a great waste of property which comes indirectly from smoke. Smoke also makes the air impure for animals and plants.

It is easy to object to smoke but by no means easy to fire a furnace in such a way as to avoid it. Complete burning of coal without smoke requires properly built furnaces, properly constructed chimneys, and much skill on the part of the fireman. The kind of furnace, chimney, and feed which is best for one purpose may not be for another.

Great improvements have been made in chimneys and furnaces, and for feeding large furnaces automatic stokers are used. They are constructed so as to feed fires constantly and evenly. No opening of doors is necessary, admitting air at the wrong time and place. Constant feeding results in uniform heat that helps to make the burning complete. Many cities compel the use of automatic stokers in mills and factories.

1. Workmen sometimes unite in insuring themselves against dangers. What is an insurance plan and what are its advantages?

2. The hours of labor in a coal mine are frequently regulated by law and are often made shorter than the hours in other occupations. Why should this be so?

This does not solve the problem of feeding furnaces that heat houses. In order to improve conditions, central heating plants are sometimes built by communities. Such a central plant can produce the same amount of heat with the use of less coal than can the separate furnaces in the houses, because a single large plant can afford better equipment and more intelligent labor.

It has been said that about 1 shovelful in 10 could be saved in firing locomotives and house furnaces if the stokers only knew how. One of the most useful things each of us can learn is how to feed a fire properly.

THE NEEDLESS USE OF COAL FOR POWER.

At last we come to the most startling waste of all. We threw away practically one-fifth of the coal we used last year. Think of throwing away over a hundred million tons of fuel! We used this amount to furnish power which might just as well have been supplied by water. This amount of water power was easily and readily available. It was unused. The use of the coal did not save the water power. Water power which goes unused can never be used later. The loss was a double one. Both the water power and coal are gone forever.

When we, as a people, are really awake to the wastes that are going on, and are interested enough in the welfare of the Nation to do everything in our power to prevent them, they will no longer be permitted. Until then reckless wastes will continue and the supply of fuel which nature has given us will be used much faster than is necessary or just to later generations.

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LESSON C-7. PRESERVING FOODS.¹

The Indians knew how to preserve some kinds of food. After a successful hunting expedition they often brought home more meat than the tribe could use, and the women dried and smoked the extra supply and hung it up for future use.

The nuts which were gathered in the fall were buried or stored in caves or carried around as a part of the family wealth. The corn which was raised in the fields was gathered in the fall and used during the winter and following spring when other kinds of food were scarce.

VALUE OF DRY GRAINS.

The value of corn and other dry grains is due very largely to the ease with which they can be kept from the time when they are gathered until they are needed for food. It is for this reason that the cultivation of grains has increased until to-day huge crops are gathered to supply nations with food through the months during which the climate makes it impossible to get food directly from the ground.

PRESERVATION OF FOOD NECESSARY FOR LARGE CITIES.

There are certain reasons which make it even more necessary for modern man to preserve food than it was for the Indians. In earlier times the savage tribes wandered around the country and secured most of their food by hunting. They went where the food was most abundant. In our cities to-day, it is impossible to raise enough food because there are so many people and so little ground which can be given over to the raising of crops. Food has to be brought to the city, often from great distances. In order that this may be done, it must be protected from spoiling. We have refrigerator cars and fast express trains; above all, we have devices for preserving food.

It is interesting to know that the time when people realized most vividly the necessity of preserving food was a time of stress very much like the present. During the French Revolution it

¹ Prepared by Susannah Usher, instructor in Home Economics, University of Chicago. This lesson aims to show the necessity in modern life of preserving food so that it may be used throughout the year and at points distant from the region where it is produced. The production of a vast food supply is one of the achievements of civilization which makes possible city life and a life free from the danger of famine.

was difficult to give the soldiers good food when they were on the march, so a prize of 12,000 francs was offered to anyone who could find a method of preserving food in its natural condition. A man by the name of Francois Appert won the prize by discovering that food will keep if it is heated and sealed in air-tight jars. This discovery was the beginning of our modern canning industry.

Appert's method was soon used in England and was first brought to this country by William Underwood, an apprentice in a London pickling and preserving company. He started a factory in Boston in 1820 in which he canned various foods, especially fruits. He found, however, that the people in America would not buy such foods unless they were brought from Europe.

Isaac Winslow, a native of Maine, began to experiment with the canning of corn in 1839. He was a sailor and in his wanderings visited France, where he learned Appert's way of canning. Sailors who took long voyages in sailing vessels were very eager for food that was not dry or salted. This was, we may suppose, the reason why Winslow was so determined to learn to can corn. The corn he canned did not always keep, but he had the idea and kept trying year after year until he was fairly successful. Canned corn, as we know it to-day, is the result of his patient work.

SCIENCE SHOWS WHAT PRESERVING MEANS.

The people who first succeeded in preserving food did not know why they had to do what they did. They did not know why they dried food or smoked it or salted it. Science has taught us the

1. Why was drying one of the earliest methods of preserving food?
2. How much water is there in some of the common foods and how does this fact help to decide which ones shall be dried and kept for future use?
3. Find out where the different dry grains came from? For example, where did corn and wheat originate before they spread over the whole civilized world?
4. Mention some of the foods which can be brought to a city without very much care in protecting them from spoiling. Show that even in this case the demand for pure food makes it necessary to exercise a good deal of care.
5. Find out by looking up in some history the reasons why the demand for food was great at the time of the French Revolution.
6. What kind of food did sailors of Isaac Winslow's time ordinarily have and why was the problem of preserving food an especially difficult one in those days?

secret of their success and has shown us new ways of preserving food better than the older methods.

Food spoils because there are plants called bacteria in the air which are so small that they can not be seen, but so numerous and everywhere present that they immediately cover anything that is exposed to the air. Where there is moisture these plants begin to multiply and feed on the material on which they fall. Whatever they feed on begins to spoil.

Methods of preservation are intended to keep bacteria from attacking food. Drying prevents bacteria from getting the moisture which is necessary for their growth. Smoking and heating tend to kill them. Sometimes the heat has to be great or it has to be applied for a long time in order to kill the bacteria that are always present in fresh food. After the bacteria are once killed, the food must be protected from the air, or a new collection of bacteria will settle on it and destroy it.

There are various ways of protecting food other than drying and heating. Food is sometimes kept from spoiling by being put in cold storage. Salt and sugar and a great many chemical substances will also prevent the growth of bacteria. Before modern methods were developed food was often preserved by "putting it down" in salt dissolved in water, or brine as it is called. The difficulty with some of these so-called chemical methods is that they reduce the value of the food, often making it injurious to man. For example, the constant use of salted foods often gave sailors a disease called scurvy. It was for this reason that Winslow was so eager to have fresh corn for himself and other sailors.

THE CANNING OF CORN.

A modern cannery where corn is prepared for the market is a huge factory full of machinery. Machinery makes possible meth-

1. What other effects beside spoiling food can be traced to bacteria? Be sure and include in your list some of the beneficial effects produced by these plants.
2. Mention all the different ways you know of killing bacteria.
3. Are there any ordinary ways of cultivating bacteria for useful purposes?
4. Why should cold check the growth of bacteria?
5. Cotton mills are often established long distances from the sources of the cotton. Why should food canneries differ in this respect from cotton factories?

ods of handling food which keep it clean and thoroughly sanitary. Such canneries are usually established near where the crop grows. Indeed, in some cases, the owners of the factory, which can work only a few months in the year, buy the fields and keep their workers busy cultivating corn when the cannery is not running.

There are two kinds of corn. One is the so-called field corn. It has a coarse, dry kernel, which is used for human food only when it is ground into meal. This variety has the advantage, pointed out in an earlier paragraph, of being very easy to keep, because it is hard and dry and bacteria can not spoil it. It does not have to be canned.

THE GATHERING OF SWEET CORN.

Sweet corn is different from the field corn. It is gathered when it is green. It must be canned if it is to be kept for any length of time. It is harvested for canning when it is "in the milk," as the farmers say. If it is too young, the starch has not developed sufficiently to make a creamy product, and if it is too old the kernels are hard and tough. Starch is one of the food substances that forms a large proportion of the ripe grain.

When the corn is ready for harvesting, it is snapped from the stalk, piled on wagons, and taken to the factory. When the corn arrives at the factory, it is hauled up a gentle incline to a platform on the second floor. The horses are unhitched, and the platform is tilted by machinery until the corn drops to the husking floor below. There is a series of these platforms, so that a number of wagons can be unloaded at the same time.

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1. Corn is one of the largest crops in the world. For what purpose is it most largely used?
 2. Why does the census report of the United States tell the amount of corn that is raised?
 3. Reference is made to the starch which is contained in corn. What is the source of supply for the starch commonly used in the household?
 4. What other foods contain a large amount of starch?
 5. Can you mention some other crops which have to be carefully watched and harvested at some particular stage in their growth? By way of contrast, can you mention crops which do not have to be treated so carefully?
 6. In preparing certain food products for the market it is customary to gather them in some cases while they are still green. This is true, for example, of certain fruits. Compare the advantages and disadvantages of this method with the canning of ripe products.

HUSKING.

The corn is husked by hand or by machinery. If the corn is husked by hand, the men and women employed husk 40 to 50 bushels a day. The machine which has recently been perfected works much more rapidly, husking more than a bushel in two minutes. It first cuts off the end of the cob, in this way loosening the husk, which is easily removed, along with some of the silk. The husks are carried away by a moving belt, put into wagons, and taken back to the farm to be used as fertilizer.

SILKING.

After the corn is husked it is again taken on a conveyor, or endless traveling belt, to the silking machine. As it moves along it is inspected by women, who pick out the imperfect ears or those that are not properly husked. The latter are quickly husked and put back on the conveyor. The silking machine consists of brushes and a device which keeps the corn moving forward and at the same time turning it round and round. In this way every part of the ear comes in contact with the brushes and the silk is removed.

As the corn leaves the silking machine it moves toward the cutting machine. On this journey it is again inspected by employees who pick out ears that need trimming because the small end is defective or the large end still has a piece of the cob remaining. This trimming is done by hand with large, sharp knives.

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1. Why is the method of unloading wagons at the cannery preferable to shoveling the corn out of the wagons?
 2. The husking machine is one of the latest additions to the equipment of a cannery. Why should husking be done by hand longer than the other parts of the work?
 3. What are the objections in general to handwork in a canning factory?
 4. In spite of the objection to handwork, it is necessary, as in the case of the inspectors mentioned in the text, to handle some of the material. Why is this so?
 5. Count up on this page and the following pages the number of different processes that are required in canning corn, and estimate the number of different kinds of workers who take part in this canning. Contrast what you find in this way with preserving food when it is done at home. From the point of view of the time expended in the canning process, which arrangement is more economical?

CUTTING MACHINE.

The cutting machine cuts off the kernels from the cob and also removes the soft part at the base of each kernel. The cutting is done by curved knives mounted on a circular frame which fits itself to the size of the ear. After the kernels are cut off, a scraper finishes the work of taking out the soft part left on the cob. It is interesting to see the ears of corn bob in at one end of the machine and see coming out at the other end the empty cobs, ready to be carried away for stock feeding or fertilizer.

As the kernels are cut off they fall on a conveyor and are carried to a machine which takes out any bits of silk or cob which remain. The silk is drawn out by wire combs and the bits of cob are removed in a revolving sieve which has meshes only large enough to let the corn go through.

COOKING AND CANNING.

The corn now goes on a further journey to the mixer, which looks like a big copper kettle. Here just enough water is added to give a creamy consistency to the finished product, and salt and sugar are added for flavor. From the mixer the corn is carried to a copper kettle called a cooker. In this cooker the corn is heated by steam and mixed by means of a stirrer. When it is cooked it is put into cans by a machine. A slide is opened in the bottom of the kettle; just the right amount of corn is let into the can, and the slide closes again.

The cans which are to be filled arrive on a moving belt from the storeroom and are brought under the cooker as fast as they

1. It is possible in the cooking process to put into corn more water than is necessary. This reduces the standard of the product. What is meant by such a statement?

2. How does the community protect itself against foods of low standard? Is it necessary to pass laws to protect the community?

3. In some cases improper materials are used in preserving canned foods. What can the community do to protect itself in such a case as this?

4. Pure-food laws, as they are called, are very recent in their origin. Why were pure-food laws not common 50 years ago?

5. Corn might be canned in other kinds of cans than those which we commonly see. What would be the difficulties in the canning of corn if glass were used instead of tin? What other kinds of vessels are used for canning besides glass and tin?

are needed. After they are filled, they are carried to a machine which crimps on the cover so tightly that no air can get in.

One might think that the process had gone far enough to be finished, but further cooking is necessary at a temperature higher than that of boiling water because the corn contains bacteria which are not easily killed by heat and which still retain enough vitality inside the can to spoil the corn. So the closed cans start on another journey. This time they ride in an iron basket on a truck pushed by hand. If you follow this truck, you come to a long room containing two rows of big iron ovens. An oven or retort is opened and the basket of cans put in. The door is closed tightly, and the cans are heated by steam. After about an hour and a quarter the cans are taken out and cooled. If they are not cooled, the contents keeps on cooking and a dark-colored corn results. The cooling is done by moving the cans slowly on a traveling belt under sprays of cold water or moving them slowly through a long tank of cold water. The belt on which the cans are placed is adjusted so that it will take the cans about 30 minutes to pass under the spray or through the trough to the packing house. As the cans arrive from the cooler they are wet, but just enough heat is left in them to dry off the moisture and prevent the rusting of the cans. The cans are then labeled and packed for shipping in wooden boxes, each holding two dozen cans.

CANNING ON A LARGE SCALE.

A factory equipped with so much machinery can turn out many thousands of cans of corn a day. There was a time when

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1. The corn is described as being cooked twice. Why is this necessary?
 2. A cannery very often has business offices in a distant city. Why is this necessary?
 3. As shown in the text, industries very frequently grow up in war time which would not grow up, with the same rapidity at least, in times of peace. Explain why this is so.
 4. From your reading of the newspapers can you tell what special efforts have been made this year to induce people to raise more corn?
 5. Canneries could not develop on a large scale if it were not for the systems of exchange which have grown up in the modern world. Show why this is so by tracing some of the lines of exchange which make it possible for workers in a corn-canning factory to get the products of other factories,

all this work had to be done by hand. The hand work is not only slow, but it is not cleanly to have food touched by many hands.

During the Civil War the country was calling for canned goods to feed the Army, but the canners had such crude methods that they could not supply the demand until some one thought of a plan by which the factories could turn out 20,000 cans of food instead of 2,000 or 2,500. From that time on methods and machinery have improved so that now cities and armies are supplied with great quantities of canned food.

The amount of corn canned in the United States in a year, as reported in the last census, was about 7,500,000 cases, each case containing two dozen cans. This year a much larger quantity is being canned because much of it will have to be taken across the ocean to the American Army in France, and some will have to go to feed the people of England and France and Italy.

OTHER KINDS OF CANNED FOOD.

The only vegetable canned in anything like the same quantities as corn is the tomato. After corn and tomatoes come peas and beans. Besides vegetables, great quantities of fruits are canned. The process of canning fruit is different from that of canning corn in several respects. The skins must be removed and the core or stone taken out. The preserving is done by means of a sirup which prevents the growth of bacteria. Still other kinds of food which are canned are fish, oysters, and milk.

Neither the quantity nor variety of these foods is so impressive as the really significant fact that man has learned how to protect himself against the dangers of famine by developing factories where pure, wholesome food can be prepared and can be made secure for use months after it is collected in its fresh form.

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LESSON C-8. PREVENTING WASTE OF HUMAN BEINGS.¹

One hears from time to time of a man who wants to work but can not find anything to do. Not infrequently there comes to the back door a man who asks for something to eat. He says that he is willing to work; that he is not a tramp or a beggar of the ordinary sort, but he has been thrown out of employment and has been looking for a new job for a number of days and is not able to find anyone who will hire him. For the man himself and for his family, this is a very pitiful situation. But more than that, it is a serious loss to the community and to the Nation that there should be anyone with strength and willingness to work who is not being used to do some of the work of the world. There is always need of something more than we have. How, then, can it be possible for people to want something on the one hand and for an individual man to be out of work on the other hand? When the question is put in this way, we begin to realize that there must be something which is not properly adjusted in the busy world round about us.

LACK OF EMPLOYMENT A MODERN DIFFICULTY.

This sort of a difficulty did not exist in the savage world. The work of the savage, to be sure, was not of the kind that the modern man does. The savage had to hunt for his living, and because he was a member of a tribe he often had to do something for the good of the whole tribe. Sometimes, for example, he was called on to fight. But there was nothing that led to the kind of difficulty which we have described when we talked about the man who can not find a job. The difficulty of finding a job must therefore be one of the difficulties that has come since the days of savagery. It is a difficulty connected with what we call our industrial system. By industrial system we mean the network of shops and offices, cities, and people by means of which we get our living.

HANDWORK IN PRINTING CALICO.

Let us study an example of one of the ways in which our present industrial system results in unemployment. Cloth that has a colored pattern on it is sometimes printed; that is, its pattern is

¹ Material for this lesson was contributed by Robert E. Park, professional lecturer in sociology at the University of Chicago. The lesson shows some of the reasons why people are at times out of work, how wasteful this unemployment is, and some of the ways in which we are trying to overcome the difficulty.

not woven in the threads but is stamped on after the cloth is made. This is especially true of the cheaper calicoes.

Calico printing was brought into England several hundred years ago by people called Huguenots who were driven out of France. They printed the cloth in this way. First wooden blocks 10 inches long and 5 inches wide were engraved with lines and figures much as woodcuts are made to-day. These blocks were then inked and applied to the cloth by hand. Of course, a block could print only in one color at a time. If the pattern had more than one color the same piece of cloth had to be stamped several times with different blocks. Each block had to be very carefully made and very carefully applied to the cloth to be sure that the pattern of one block fitted into the pattern of the other blocks. Even if only one color was used, the block had to be stamped on a yard of cloth several times to cover the whole yard and each time the stamping was done the edges of the pattern had to match. Some idea of the amount of work required may be seen from the fact that the printing of a piece of calico 28 yards long in a single color required 448 separate applications of the block.

As time went on, print calico was used in large quantities so that a great many men and boys were hired to do the stamping and to make, repair, and keep clean the blocks with which the printing was done. These workers received good wages and so were able to live comfortably. They had a right to be contented, too, for they were doing work which the people—that is, the community—wanted done.

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1. What is a community? Are you a member of one? Are you a part of the industrial system?
 2. What is meant by an engraved block? How can such a block be used for printing? Could you make a block of this kind out of wood?
 3. What is a cylinder? How is it possible for a revolving cylinder to stamp a continuous pattern on calico? Are newspapers printed by revolving cylinders?
 4. Why should the people who had learned to print calico by hand have found it difficult to take up other lines of work?
 5. What is meant by saying that workers have been displaced by a machine?
 6. The lesson says that the people who printed calico were helping in the general task of getting a living. What does this mean?
 7. Is the work well spent that goes into making cloth and other things attractive?

UNEMPLOYMENT FOLLOWED AN INVENTION.

The condition of these people was changed very suddenly about the year 1785 by the invention of what was called "cylinder" printing. Instead of being engraved on blocks, the pattern was then engraved on a cylinder. The stamping was done by turning the cylinder over and over by means of machinery and printing a continuous pattern on the calico. Later improvements made it possible for two or more colors to be printed at the same time. The final outcome was that calico could be printed much more rapidly and in much more satisfactory patterns than before. What was more, one boy, with the aid of the new machine, could do all the work formerly done by 100 men.

Of course this meant that the 100 men were no longer needed for the work of hand stamping. Their employers discharged them. That was not all. When the men tried to get other work they found that their long years of training for calico printing had made them good workmen in this trade, but had given them no training for other lines of work. As a result, employers in other trades would not hire them.

THE WORKER SUFFERED; OTHERS GAINED.

Here, then, was a situation in which the community as a whole gained by having a new invention, but the workers in the industry suffered. The people who wanted to use this stamped or printed cloth could get it much cheaper because of the new machine. The workers, on the other hand, who were out of em-

1. Suppose your father should become unemployed; find out what effect this would be likely to have upon him; upon you?

2. Get from your father a list of reasons why he might become unemployed. See if these reasons would hold good in the case of other fathers you know.

3. "The development of machinery is of great benefit to man." "The development of machinery has caused great suffering." Which statement is true? Are they both true?

4. Do you think it right that the worker should suffer and the community gain by the introduction of machinery? How would it do to have the community pay the worker a weekly wage until he could find a new job?

5. Take a piece of cloth and find out whether the pattern is woven into it or merely stamped on it. If it is a woven pattern, how can such a thing be done?

ployment and could not readily take up new lines of work suffered because of the invention.

From this first example we may turn to a second kind of example and one which is of enough importance to school boys and girls to deserve their careful attention. There is a great temptation to leave school and begin earning money as soon as the law permits. An inexperienced boy or girl does not always see that success in later life is likely to be increased by continuing school work.

A BOY LEAVES SCHOOL TO GO TO WORK.

Let us see what happened to a boy who left school early. In 1909 John Williamson was living in one of our large cities. He had made up his mind that he wanted to go to work. John was 14 years old and was in the sixth grade. Because he was 14 years old he could get an employment certificate. His family did not need the small amount of money which he could earn, but John's father and mother did not realize how important it was for the boy to continue his school work, and so allowed John to drop out of school. He got a position as a messenger boy.

At first he found the work very interesting. Sometimes he carried messages into mills and factories, where fascinating machines were at work making all kinds of interesting products. Perhaps his next trip would take him to a great mail-order house where he would see men and women opening thousands of letters, taking from them the orders, boxing up goods, and shipping the boxes to customers. Very interesting, too, were the public buildings and the people in them, for John lived at the capital of

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1. Draw up a list of reasons why it would have been wiser for John to have stayed in school.
 2. How would more education have made it easier for John to get jobs?
 3. What is an employment certificate? Why do the better State laws prevent young boys and girls from leaving school to go to work?
 4. What is a mail-order house? Did they have such an institution in Roman times? What things do mail-order houses sell?
 5. In ordinary years it is not unusual for 10 per cent of the workers to be unemployed. What does "10 per cent of the workers" mean?
 6. Find out if the outbreak of the present war caused people to be unemployed.
 7. Find out whether more people are unemployed at the present time than is usually the case.

his State. Several times he carried messages to the governor's office.

Then, too, small as was the amount of money he received for his work every Saturday night, he took great pride in receiving it; and since his father and mother permitted him to keep nearly all of it for his own use, he was able to buy some of the things which he liked. He bought a bicycle and later a motorcycle.

AN UNTRAINED BOY IN A BLIND-ALLEY JOB.

After a few years John's work became monotonous to him and he discovered that the job he had was not one which brought rapid increases in its rate of pay. After he had been a messenger boy for five years, he was getting very little more than he was in 1909. He thought seriously of looking for another job, but he hesitated to do so because he now realized that, having failed to complete his school work, he was not fitted for any position which paid well.

Unfortunately he was not left to decide the matter for himself. One day the manager of the office called him in and told him that he would not be needed any longer because the company was taking on some younger boys at the same pay at which John began. •

John now realized how foolish it had been for him to drop out of school and enter what is known as a "blind-alley" occupation. He had been attracted by the possibility of earning money, but he now saw that in the long run the world is ready to pay more for workers who have training than for those who begin too early and do not plan for their later work. John discovered too late that employment is something which one must plan very carefully.

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1. See if you can find any other occupations which are "blind-alley" occupations.
 2. Are there positions for which a high school education will give you good preparation?
 3. For what kinds of positions is a college education desirable?
 4. What are "corporation schools?" Do they give general education or special training?
 5. Some communities dislike to have Chinese laborers. They say that the presence of the Chinese laborer causes unemployment. How could this be true?
 6. Does the community ever try to make a person do something useful when he does not want to work?

SCHOOLS ESTABLISHED BY EMPLOYERS.

Even the community has discovered that it is very unprofitable for everybody concerned to have cases like that of John. Telegraph and telephone companies and many other large employers who use messenger boys are now establishing schools. The boys thus get opportunities to go on with study when work is over and even when they are not busy during working hours.

UNEMPLOYMENT CAUSED BY CHANGES IN DEMAND.

The two examples of unemployment which we have just read do not tell the whole story. Many other causes throw men out of work. For example, after the war a difficult problem is sure to come up. People are now busy making war materials. There is no difficulty these days in getting a job. When the war stops, war materials will not be in demand and workers as well as the whole country will have to make changes. These changes leave some people unemployed.

UNEMPLOYMENT CAUSED BY COMPETITION.

People sometimes lose their jobs because of what is called competition. For example, from 1812 to 1815 we were at war with England. During the war our merchants did not trade with English merchants and we began to make in New England woolen and cotton cloth which we had formerly bought from the mother country. Thousands of workers were taken into this business. When the war was over the cheaper English goods came across the ocean in great quantities and many American manufacturers had to go out of business. Of course this put a great many people out of work.

We sometimes read in the papers to-day the question: What is going to happen to our new chemical factories? Before the war Germany made all our chemicals, including dyes and medicines. Now, because Germany does not supply these, factories are growing up in the United States. What will become of them after the

1. Some one has said that there are three classes of "unemployables": (1) Those who are physically or mentally wholly unable to work, (2) those who lack efficiency in work, and (3) those who are too lazy to work. Give illustrations of each class.

2. Mention occupations which can be carried on only in certain seasons. Do you think these "seasonal occupations" would cause unemployment?

3. Do unsettled conditions in business increase unemployment? What is meant by unsettled conditions in business?

war? What will become of the workers who are becoming expert makers of dyes and medicines?

PERSONAL CAUSES OF UNEMPLOYMENT.

Sometimes a person is out of work, not because of what happens in industry, but because there is something wrong with him. Some people are out of work because they do not want to work. The tramp, the street loafer, and the hobo are illustrations. There are other people who are unable to work because of sickness or accident. Of course they are not to blame, but the community ought to take care to prevent such sickness and accidents so far as may be possible.

THE WASTE OF HUMAN RESOURCES.

Unemployment is one of the greatest wastes in our modern life. All of us understand that a family is comfortable and prosperous when all of its members are able and willing to do their fair share of the family work. After all, the community is just one big family. One man—or, better, one group of men—makes shoes; another group makes hats; another cans vegetables; another raises wheat; another makes flour; another bakes bread; and so on through all the different occupations which we see around us. This community-family is more comfortable and more prosperous when each of its members is doing his full share of work. If any one of them is not working, there is just that much labor going to waste, no matter whether the unemployed person is to blame or society is to blame.

DOUBLE WASTES OF UNEMPLOYMENT.

It is worth noticing also that unemployment does more than merely cause a man to be idle. It often causes him to lose courage and it often takes away from his children the education which they need to make them good workers later. The world loses not only because of the change in the man, but even more because of what happens to his children.

1. Why should a man not be as good a worker after a period of unemployment as he was before?

2. How can an employment bureau find work for people?

3. It is desirable to have as little sickness as possible. Do you know how they try to prevent accidents in factories?

4. What is meant by calling unemployment a "waste of human resources"?

REMEDIES.

Unemployment is such a serious waste that we are doing a great many things to get rid of it. In every city you will see labor exchanges or employment bureaus. Sometimes a city or a State government regards unemployment as so serious that it opens such a bureau; even the National Government has taken a hand in the matter. The purpose of these exchanges or bureaus is, of course, to find new jobs for men who have lost their old ones.

Another way in which we try to prevent unemployment is through the wise timing of what we call public works, such as the building of roads, bridges and streets, and the improvement of parks. A device for relieving, but not preventing, the evils of unemployment is called unemployment insurance.

INTELLIGENCE AMONG WORKERS AND EMPLOYERS THE REAL SOLUTION.

What is needed most of all is better preparation among workers and wiser selection and planning on the part of those who employ. As we have seen, unemployment is due to our way of living and we must learn to understand more fully its dangers and difficulties.

American schools are putting in industrial courses in order to train workers. The educated worker earns better wages and can meet changes in the industrial world with less loss.

Vocational guidance bureaus are being organized. In these, people and occupations are studied with a view to getting the right person into the right position.

Employers and workers alike are benefited by these efforts to improve conditions and to put an end to waste of human beings through more study and a better education.

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Chapter III.

MACHINE INDUSTRY AND COMMUNITY LIFE.

Everyone is so accustomed nowadays to the use of machines that it is hard to realize that nearly all the machinery with which we are so familiar has come into use within the life of a few generations. Young people who are still going to school remember when automobiles began to be used; the fathers of those young people remember when trolley cars, telephones, and electric lights were introduced; their fathers, in turn, remember when the use of sewing machines became general, and their grandfathers remember when the telegraph and railroad trains were wonderful novelties.

The people who lived 200 years ago had very little machinery of any kind. They traveled in horse-drawn carriages, and they used simple hand tools in making their furniture, hand looms in weaving their cloth, and hand implements in producing their crops. Even their plows were small and crude. There were no factories then, and everything was made in small shops or in the homes of the workers.

The use of machinery of the kind that we know began a few years before the United States became a Nation. Several important machines were invented about that time, and it was found that goods could be made better and cheaper if a number of workers gathered in one building and used machines driven by power from a waterfall or a steam engine. What is known as the "factory system" thus developed. Gradually the people dropped the manufacturing that they had been doing on a small scale in their homes and shops, and sought work in the factories. The change made such a difference in the life of the people that it has been called an "industrial revolution."

LESSON C-9. INVENTIONS.

By W. I. THOMAS, professor of sociology, University of Chicago.

The best flour mill in Athens in the time of one of its greatest rulers, Pericles, produced only two barrels of flour in a day. One of the mills in Minneapolis produces in our time in a single day enough flour to fill 17,000 barrels.

It requires no large knowledge of the history of the world to understand this difference. The mill of the ancient Greeks was of a very crude type. The machinery in a modern flour mill is run by great engines which furnish power that the ancients never dreamed could be harnessed to do man's work. The machinery, too, that grinds the flour has been perfected through long years

of invention and has taken advantage of all of the new possibilities that come from the use of steel and iron.

ACHIEVEMENTS OF MODERN MACHINERY.

It is not in the milling industry alone that inventions have increased the output of things that we need. In the early part of the last century a skilled workman could make in a day about 30 needles. At the end of the century a girl with the help of a machine could make in a day 500,000 needles. Perhaps this statement ought to be reversed and we ought to say that the machine makes the 500,000 needles with the help of a girl. Automatic machinery has taken the place of an immense number of workers and has made it possible for everybody to have what was a comparative luxury in earlier days.

Again, we may find other examples of the benefits which have come through invention by noting the results of improved transportation. We have a record of the amount of mail which was carried in the earlier days when all traveling was by horseback or at most by stage coach. The amount of mail which is received and distributed in a single day in New York City at the present time is more than was received and distributed in the whole United States in the first year of the nineteenth century.

How rapidly the railroad has developed will be easily recognized from the statement that in 1831 the Baltimore & Ohio Railroad had only 82 miles of track. This was of a type that we should describe to-day as "flimsy," and the company was trying

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1. Find out how much flour is used in the family for each member. How many mills like that in Athens would be required to feed the people of the United States?
 2. From the facts given show the truth of the statement that great cities could not exist without machinery.
 3. Find out what processes are used in making flour in a modern mill.
 4. Why are the great mills at Minneapolis?
 5. What is an automatic machine? Find out the number of processes involved in making a needle.
 6. What effect does the use of automatic machinery have on prices? In answering this question keep in mind the fact that the purchasing power of money differs in different periods.
 7. What are the different steps required to take a letter from a sender to the one who receives it?
 8. Why is it more necessary for the government to go into the mail carrying business than to take up other kinds of business?

all sorts of experiments with different kinds of power to draw the trains. It was experimenting with horses and sails as well as with locomotives in the hope of finding some economical way of moving trains.

In agriculture the changes that have taken place are of no less importance. At the date mentioned above when the railroad was still trying to perfect its machinery the reaper was invented. The construction of this machine, which aids in gathering crops, has gone forward since that time until now 7,000 machines are made in a week in a single factory, and it requires 14,000 freight cars to carry the annual output of that factory. American reapers have gone to Europe and are in use there in great numbers to supplement the work of human hands.

RESULTS OF INVENTIONS.

The result of all these mechanical improvements is that we have an abundance of those things which are necessary and make life more comfortable. A vastly larger population can be supported by the work which is done by these machines than could be supported in a country which had only hand labor. Something of the contrast in wealth can be brought out by the statement that at the beginning of the eighteenth century the total revenues of the United States did not equal the value of last year's crop of hay in the State of Vermont.

When one goes over such statements as have been made on the last three pages, one begins to understand what is meant by the statement that man depends on his intelligence for his con-

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1. When was the first railroad built and where?
 2. Why are rails laid down for the roadbed of railroads? Why do trains not run over ordinary roads?
 3. What has been done to improve tracks so that they will not be "flimsy"?
 4. It was natural enough that the railroad managers should think of horses and sails as sources of power. Make a list of the kinds of power used to aid in transportation.
 5. Find out something about the rate at which the population of civilized countries has increased in recent centuries.
 6. What is the revenue of the United States at the present time?
 7. What increases in the revenues of the country have been required to conduct the war?
 8. How are revenues raised? How have they been increased for the war?

quest of the world. Man is not an especially strong animal; nor is he especially swift. When he was obliged to get his food by hunting in the forest, he was at a very great disadvantage as compared with many of the strong and swift animals which he encountered. When he found that he did not have strength, he devised cunning inventions.

TRAPS.

For example, he learned how to capture, by means of traps, strong and powerful animals which he was utterly unable to attack with his unaided strength. For this purpose he took into his service the power that is to be found in the trunk of a young sapling. He cut off this sapling about four feet from the ground and drew it back so that if it were released it would give out a powerful stroke. He fastened the sapling back with a catch that kept it in position until it was released by a cord which was stretched across the path that the animal would take. Held in a notch of the sapling was a heavy spear. This was pointed in the direction from which the animal would come as it made its way down to a supply of water. The animal coming through the forest ran into the cord which in turn released the trigger and the heavy spear was driven into its breast.

WEAPONS.

Another example of the inventive genius of primitive man is to be found in the way in which he provided himself with sharp-pointed instruments. He had no teeth that could compare in

1. Get other examples of man's conquest of the world. For example, what has he done to shelter himself from the weather? To lengthen his day in spite of darkness? To make travel on land and water possible?
2. Not all members of a community are equally inventive. How does the community encourage those who do its inventing?
3. Contrast man's physical powers with those of some of the animals which you know.
4. There are a great many other kinds of traps. Find descriptions of some others. Note that the early kinds could not use iron. Why?
5. Man's superior intelligence was shown not merely in killing animals but in taming them. Show the importance of domestication of animals to the progress of civilization. What kinds of animals are domesticated?
6. To-day man is substituting machinery for animal power in many quarters. Why?

length and sharpness with those of the tiger, but he made for himself an artificial "tooth." He took a stick and sharpened the end. He hardened this sharp point in the fire, or he inserted in it a piece of flint. Sometimes in order to make the weapon still more effective, he poisoned the end of the spear. The poison he collected from the tooth of a snake or from poisonous insects or decaying flesh. He could then kill his enemy with even the slightest wound. In this way he not only made himself a substitute for a sharp tooth, but he gave this tooth a destructive power which few animals possess.

INVENTIVE INTELLIGENCE.

Later he learned how to shoot his sharpened stick from a bow. This means that the strength of a piece of tough wood was added to his own hand very much in the fashion in which he used this same kind of strength in the trap which he set for the large animals. The bow and arrow is a natural enough invention when one follows its development from the simple spear, but as contrasted with anything that the animals have thought out it shows man to be a genius of the highest type. The animals are not able to think about the things around them as man can. They must have seen sharp sticks and they must have pushed against a young sapling and must have experienced the strength of the spring in such a sapling, but they never had the idea that they could use these natural forces for their own purposes. Man not only saw things about him but he understood how to use them.

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1. The earliest weapons were very simple. What were some of them?
 2. Why was stone substituted for wood as man became more intelligent?
 3. Even in modern war poisons are used in the form of gases. Why?
 4. The statement is sometimes made that a bow increases the strength of man's attack. Can this be true when the shooter has to be strong enough to bend the bow? What does the bow do for man?
 5. Do animals ever invent anything?
 6. Animals can see and hear and smell as well as men. What part does seeing play in invention?
 7. Can animals be taught to use inventions made by man?
 8. What can you find out about the comparative size of the human brain and brains of animals?
 9. How does the human hand differ from that of the higher monkeys?

The whole history of human civilization is a history of successive inventions and larger mastery of natural forces. We sometimes think of ourselves as very superior to primitive peoples. We do, indeed, have the benefit to-day of a great many tools and machines which they did not possess. Our present advantages come not from superior minds, but from the fact that each generation has added something to the stock of devices that men have learned to employ. The result is that generation after generation has acquired new devices and added these to the stock of inventions until the present is filled with ingenious ways of using all sorts of materials and natural powers.

IDEAS WHICH HAVE BEEN WORKED OUT.

As a result of the accumulation of experiences, many ideas which early men had have been worked out in new ways. For example, the South American tribes have "blow guns" which resemble in principle our modern guns. The blow gun is a long hollow reed. The power is supplied from the lungs of man. When he blows as hard as he can into one end of this hollow reed, he sends out a missile at the other end which is powerful enough to kill, and can be aimed with deadly precision.

This principle of the hollow reed is used in the modern world more effectively than among the South American tribes because the energy which was behind the blow gun has been multiplied through the invention of explosives. Furthermore, the hollow reed is no longer the natural reed that is provided by the vegetable world; it is a steel tube that has been made through the use of minerals which man has learned to take out of the ground and smelt and cast in his iron and steel foundries. The modern gun is the result of the idea of the reed gun plus many ideas about iron and explosives.

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1. What are some of the chief materials which modern man has that savages did not have?
 2. What part does language play in promoting invention?
 3. It is sometimes said of a nation such as ours that we are an industrial nation. What does this mean? What happens to inventions when an industrial nation is drawn into war?
 4. Why is a blow gun more accurate in its aim than the hand can be in throwing a missile?
 5. This war has been described as a war of iron and steel rather than of men. What is meant by that statement?
 6. When a modern gunner shoots how does he get his aim?
 7. What does an archer have to keep in mind when he aims an arrow?

PRINTING.

Printing is always thought of as a very modern invention. We find in the histories the statement that this invention did much to usher in the modern period of civilization, but the idea of stamping a pattern is very ancient. The South American Indians have rubber stamps. They do not use them for office work, as we do in modern life, but for printing on the human body the patterns which they wish to tattoo. The real inventions in modern printing were the making of movable type which could be put together in new combinations, and the use of a press instead of the hand stamp. What has finally been worked out in a huge modern printing establishment is the simple principle known to the South American Indians. The means and materials used in the modern machines are new and were utterly unknown to primitive peoples. The modern printing press had to wait for the development of steel and iron and for the power that comes from the steam engine.

TELEGRAPHING.

All sorts of devices for communicating at long distances were known to primitive men. When Stanley was making his first journey across Africa he found that the natives often knew beforehand of his coming. This puzzled him until he learned that they had a system of telegraphing by beating drums. They had a code of signals that would carry for long distances, and by means of this code they let each other know of the approach of a party of civilized men. The principle of signaling is worked out in the modern telegraph system. The use of electricity and copper wire has changed our methods. These modern methods were quite impossible until both copper and electricity were known to man and mastered by him.

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1. Find out about the invention of gunpowder. What effect did it have on civilization?
 2. Who first invented movable type?
 3. Get a description of the first printing press.
 4. What other methods of signaling do you know? Which can be used over the longest distances?
 5. Wireless is in many ways cheaper and more effective than the older form of telegraph, which required wires. Why should the simpler form come later than the more complex?
 6. The careful planning which man goes through is illustrated in the building of a good road or a bridge. Show how these "pay in the end."

What we mean by saying that man uses his mind in dealing with the world is illustrated by every one of the inventions that has been described. Each story of the way in which ideas have been more fully worked out shows why it is important for people to learn from earlier generations. Books are records of inventions. The stories that men told each other around the campfire before there were books were full of the experiences which finally helped invention. When travelers came back from distant journeys and told about the doings of strange peoples, they added to the ideas that were remembered and used later in making man's life richer and broader.

The result of all this is that man has come to think of the world in a new way. If man sees an animal that he must attack, he does not begin at once to pound and bite and scratch with his fist and teeth and nails. He looks around for a tool. He finds a sharp stone or he exercises that patience which is required for making a plan. In making his plan of attack he may spend a long time getting things ready for the final step. For example, the early hunter often lost his game because the animal escaped in the water. Man did not plunge in after the escaping animal. He used his mind and built himself a canoe, which in the long run made him very much more successful than he could possibly have been if he had depended on his power as a swimmer. He stripped the bark from a tree, tied the ends together, and later devised a paddle. All this took time and thought, but it paid in the end.

In recent centuries, and more especially in recent decades, this way of meeting one's needs has come to be the common way. Almost everything man does these days is done by machinery. The result is that our thinking and our study and our modes of life are largely influenced by the great machines that fill our factories, draw long trains, and make home life comfortable and industry productive.

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LESSON C-10. IRON AND STEEL.¹

Two black men, almost naked, squat on opposite sides of a fire in central Africa. Each of them has a little hand bellows with which he forces the fire. From time to time they lay on the fire lumps of charcoal and lumps of iron ore. All day they work and sweat, blowing and feeding their little fire. At evening a 10 or 12 pound lump of iron lies in the glowing coals ready to be hammered on the anvil and shaped into spearhead, knife, or kettle.

These men are smelting iron ore, which is a kind of rock with some iron mixed in with several other kinds of mineral. The hot fire makes the iron melt and run out, so that it can be gathered up and used.

ANCIENT METHODS OF SMELTING.

No one knows how long man has smelted iron ore. Iron ore is to be found in almost all countries, and primitive man in many lands knew how to use it many, many centuries ago. Perhaps some primitive man's camp fire first smelted iron by accident. Legend says that 1,500 years before Christ a forest fire showed the people of the island of Crete how to make iron. Pictures on the walls of Egyptian buildings which date back to 3,500 years before Christ show Egyptians smelting iron with the aid of a goatskin bellows.

Each of many ancient peoples must have found out for itself how to make iron, for it was made by the same method in very ancient times in middle Africa, in China, in India, as well as in the countries around the Mediterranean, and in England where Cæsar found the Britons making it very much as the explorer may still find it made in remote parts of Africa and Asia.

The Romans were unable to make much improvement on this process of making iron. It produced all the metal with which Cæsar armed his victorious legions. The iron which bolted the oak of the little ships of Columbus was made in a simple fireplace like a blacksmith's forge. The iron for Washington's cannon and muskets was made in forges or tall furnaces not unlike big stone chimneys. The fire was fed by the forced draft commonly produced by a water wheel.

¹ This lesson was prepared by J. Russell Smith, professor of industry, Wharton School of Finance and Commerce, University of Pennsylvania. It aims to show how dependent modern forms of industry are on the iron out of which all machinery is made. It also shows how the handling of iron has been developed on a vast scale through the use of power machinery.

We must not make the mistake of thinking that because these ancients had difficulty in making iron they could not make good iron. The fact is it was as good as any, and better than most of the iron we have to-day. We have merely learned how to make it more easily and thus more cheaply. The principle of iron making has always been the same whether it was in Central Africa or Rome, in the time of George Washington or Andrew Carnegie—hot fire smelts the iron out of the ore.

THE USE OF COAL IN SMELTING.

It was very fortunate that man learned how to smelt iron with coal and coke (which is made from coal). Before this time the iron industry had moved about, following the forests, to get a supply of charcoal. Since coal is so abundant in some places the iron industry was able to settle down. This explains the growth of great iron centers such as Pittsburgh.

As long as charcoal was used for the fire, the materials could not be piled up very high because the weight would crush the charcoal and smother the fire. But coke is hard, and layers of coke and ore can be piled to a great height and still let the air be forced through to feed the fire. This has enabled the present iron furnace, called a blast furnace, to become several times as high as the one that made the iron for Washington's cannon.

Smelting is now done on such a large scale and so cheaply by machinery that instead of costing \$1 a pound to make iron, as it did in Cæsar's time, it now costs about 1 cent a pound and sometimes less than that. This is the reason we live in what is called an "age of steel." Steel is merely a refined kind of iron, and it is so cheap that we can afford to use it freely.

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1. Are all the metals which are taken out of the ground smelted like iron?
 2. What is the effect of the bellows on a fire?
 3. What happens when iron rusts? How can rusting be prevented? What is the effect of leaving machinery out of doors?
 4. Find out how coke is made. Find out how charcoal is made.
 5. Where were the forges and foundries of George Washington's time located? Look up Valley Forge in this connection. Also look up Kipling's stories in Puck of Pook's Hill to find how the ancient Britons made their iron and what they thought of iron.
 6. Find out what is the difference between iron and steel.
 7. What are some of the uses of steel for which iron is not suited?

THE AMERICAN IRON INDUSTRY.

In the United States we now make 2 pounds of iron every day for every man, woman, and child. In fact, the American iron industry is larger than that of any other two countries. The size of our industry is due in large part to our great riches of raw material. We have the best iron ore in the world, whole mountains of it up in the woods near Lake Superior, soft like dirt so that it can be shoveled up, and so near the surface that we can take it out of open pits and in this way get it much more easily than from the deep mines which are elsewhere common in gathering metal. We also have very large areas of coal land to make the fuel to melt the ore, and plenty of the limestone which is also put into the furnace because it unites with the dross and helps the smelting process.

American iron making has sprung up very quickly. In 1855 the first boat bringing iron ore from Lake Superior toward the eastern coal fields carried a cargo of 132 tons through the canal at Sault Ste. Marie. Just 60 years later, in 1915, a boat went through the same canal with 11,262 tons, and in the season of 1916 more than 60,000,000 tons of ore were carried from Lake Superior to the ports along the lower lakes.

Kipling in his wonderful *Jungle Book* shows us how much weaker is the man cub than the wild animals of the forest, but the man cub rules the earth because he had brains enough to learn how to harness and use mechanical power—machines. The getting of iron to-day is a wonderful example of this machine work. We do not make iron—machines and artificial power make iron for us.

1. The possession of iron mines has been one of the important matters in this war. Where do the allies get their iron? Where does Germany get iron?

2. In the United States, what States produce iron ore? What States manufacture steel to the greatest extent?

3. See if you can find any reasons for the location of Gary, Ind., the steel town.

4. Can you see any reason for locating iron furnaces near coal fields and limestone quarries instead of near iron mines?

5. The Great Lakes are said to have contributed quite as much to the American steel industry as the iron mines and the coal mines. Why?

6. Describe some of the industries which depend on the country's output of iron and steel.

7. What effect has the development of the steel industry had on building trades?

In making iron and steel in America the iron is never touched by human hand in its journey of 1,000 miles from the ore banks in the woods near Lake Superior to the steel mills at Pittsburgh or Buffalo. Nor is it lifted by human muscle.

MINING IRON ORE.

The ore in the open pits is loosened with dynamite, and the steam shovel, running on railroad tracks, sticks its steel scoop into the loose ore five times a minute. Each time it takes up two tons, swings it around and drops it on the freight car on the next track. From a single open pit 15,000 tons of ore are hauled away in a night by locomotives. On one ore range, the Mesaba, more dirt has been moved to get at the ore than was moved to dig the Panama Canal.

The ore is taken from the mines in freight trains of 50 cars each, running to Duluth and other ports on Lake Superior. Here the trains run out on top of high ore docks and drop the ore through the bottom of the cars into big pockets on the dock. From these pockets it is again dropped through chutes into the steamers alongside. These vessels, 600 feet long, are loaded with 10,000 tons of ore in 20 minutes, and the same cargo can be unloaded in 3 hours and 20 minutes by huge machines called clamshell unloaders. They work almost as your double hands would in sand or sugar and take up as much as 15 tons at a scoop.

As the boats can work only in summer when the lakes are not frozen, some of the ore is brought down from the Lake Superior region and kept in great piles at lake ports like Buffalo, Cleveland,

1. It has been said that this is a war of machinery, not of men. Show some of the ways in which this is true.
2. Explain why dynamite is used in mining.
3. Get a description of a steam shovel; or, better, see one and describe it. For what purposes is it used other than handling ore?
4. A good deal of emphasis is laid on the rapidity with which all this work is done. Show the relation of speed to cheapness of production.
5. The high docks up to which the cars are carried for unloading illustrate a principle which appears again in grain elevators, stone crushers, and other kinds of storage places and mills. Explain this principle and find other examples.
6. By way of contrast with the mining processes here described, the ordinary methods of getting iron are much more difficult. Get a description of them.

and Chicago until wanted in the winter. It is then carried by freight cars to the iron and steel mills at Pittsburgh, Youngstown, or Harrisburg.

MODERN FURNACES AND ROLLING MILLS.

The freight cars run up on high trestles beside the great furnaces, 100 feet high, and roaring with fire from bottom to top. The ore is dropped into storage bins, from the bottom of which it drops again into the weighing cars operated by the men who feed the furnaces. These weighing cars run up on a little elevator called the skip hoist and automatically dump the ore or the coke or the limestone into the furnace.

A few hours later when the melted iron has trickled to the bottom, the furnace man taps the furnace by breaking the clay dam that holds back the melted iron. At a tapping a hundred tons of it may run out like milk into great ladles mounted on freight cars. These carry the molten metal to a steel mill, which may be a mile away, where it is further purified by fire and mixed with different metals to make the different kinds of steel. After coming from the steel furnaces, the metal is poured into molds, where it is allowed to harden just enough to hold its shape.

Then it is thrown upon rollers that carry it to the crushing rolls of the rolling mill, which, driven by engines of several thousand horsepower, will crush the big ingot of steel as a rolling pin in the hands of a cook shapes pie crust.

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1. In the statement about shipping ore in summer we have a description of what is called a seasonal industry. Find other examples.
 2. Reference is made to weighing cars. It is a fact that whatever goes into these furnaces is carefully regulated by weight. Why should this be so?
 3. What is pig iron? What is a steel ingot?
 4. Find out how rails and wire are made from bars of metal.
 5. Find out how steel differs from iron. What are the different grades of steel?
 6. Following some of the ordinary things that we use in everyday life, show how iron helps us in the preparation of a loaf of bread, a pound of butter, a fried potato, an apple, a cup of drinking water, a heated room, a bag of cement, a pile of bricks.
 7. How many ways does iron help in your coming from your home to your school?
 8. How many uses does iron serve in the schoolroom, in the school-house, in a schoolboy's clothing, in the various rooms of a house?

Different kinds of rollers shape the steel. It may be shaped into a flat plate for an engine boiler, a rail for the trolley track, a girder for the skyscraper, a rod for the blacksmith, a pipe for the plumber, or a chunk of steel to be used in the foundry, the machine shop, or the automobile factory.

The finished product costs only a cent or two per pound, yet it takes at least a thousand men to make it. Who are these thousand men? They are always members of gangs—gangs of strippers taking dirt from the ore, gangs of steam shovelers, train crew, dock crew, boat crew, moor-dock crews, train crews, gangs of iron furnace men, steel furnace men, yard men, yard train crews, rolling mill men. Then the limestone and the coal and the coke must be followed through all their stages before we have one single pound of steel completed. Yet the two half-naked black men in Africa made steel all by themselves—very good steel, too, but very costly, and very little of it. Andrew Carnegie was the first man to bring under one management all the stages of modern steel-making.

SOME USES OF IRON AND STEEL.

How could you make a saw without iron? It has been done by certain South Sea Islanders who had no iron on their coral islands and no way to trade for it, so they laboriously set sharp shark's teeth in a hard piece of wood. It wasn't much of a saw, but it was the best they could get. Could you do any better with the materials they had?

How could you make a hatchet without iron? For answer, go to some museum and see the poor stone ax of the American

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1. The present war has seriously affected both the price of iron and the amount of iron that can be secured. Why is it more expensive to put up a building now than it was before the war?
 2. How is a "gang" of men kept at work? Is the "boss" helping to produce iron and steel?
 3. Was Carnegie's organization of the steel industry a legitimate reason for the great wealth which he accumulated?
 4. In primitive life before the days of manufacturing, what was the occupation to which men gave attention? What were their rewards?
 5. What methods did the Indians use to supplement their crude tools? For example, how did they hollow out logs for canoes?
 6. Describe some of the arts in which the Indians were proficient with special reference to the raw materials used.
 7. In what respects were these same arts modified by the introduction of iron?

Indian. Then you will understand why he did not chop down trees or become a farmer.

We make our iron by machinery, and the machines that make it are themselves of iron, as we see by looking over the list—steam shovel, track on which it stood, ore car, locomotive that hauled it, ore dock, iron ship, engine on the iron ship, the clam-shell unloader, the railroad, even the furnace itself, and the rolls of the rolling mill—everywhere iron, or steel which is but a kind of iron.

THE IMPORTANCE OF MACHINERY TO-DAY.

As with the making of iron, so it is with nearly all the rest of our goods. Machines produce the goods, and machines are mostly iron. Take boards and nails. The saws and axes that fell the trees are of iron; so in part are the wagons and cars that haul the logs and the sawmills that saw them—everywhere iron. The blacksmith once made nails by hand. Now we poke the end of a long roll of wire into a machine and it rapidly pulls in the wire and drops out nails by the kefull. The shoemaker once sat at his bench with knife, awls, and hammer. Now he stands by a big motor-driven machine with a hundred clicking parts and makes shoes five times as fast. Man first printed with a little hand press, but now we feed the roll of paper to a machine as long as a room, which piles off newspapers or books by the thousand to the hour. Power, driving machines made of iron, gives us the goods of this day.

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1. Can you name something that is made without a machine?
 2. Can you name something man has made that is made without iron?
 3. Do you see any disadvantages that come from the great development of modern iron industry?
 4. There is a great deal of legislation which is designed to protect workers in iron mills and the special dangers of this industry have led to the discussion of various kinds of insurance. These so-called cooperative industrial devices are modern. Show why they were not possible in a primitive community. Show how the iron industry may properly be described as a cause of many new methods of organizing community life.
 5. The way in which one man in an iron mill does his work is of great importance to all who use the product. Show how the individual worker has responsibilities in a mill. Show, on the other hand, how the individual loses in importance.

What runs the machines? Engines. In the engines the coal burns on an iron grate beneath an iron boiler. The steam goes off through iron pipes into an iron cylinder and pushes an iron piston, which drives iron shafts and iron wheels.

The production of the coal that runs the engine depends on the use of iron. The miner digs the coal from beneath the rocks with pick and shovel—or, in some cases, with a big, complicated mining machine—and a little railroad track follows the miner to the very breast of the seam, where he shovels up the coal. Iron cables haul the cars to the surface; iron pipes carry out the water to keep the miner from drowning and bring in air to keep him from suffocating.

OUR DEPENDENCE UPON IRON.

Iron serves us also in our food. Our bread and meats are borne to us over the iron way from the grain fields and pastures of the West. The iron horse brings us oranges from Florida and California; the iron ship brings us bananas from the Caribbean Sea and wool from Australia. Iron machines prepare our canned foods. The cans are made by machines; they are filled by machinery, sealed by machinery, soldered by machinery—everywhere machines; everywhere iron.

Increased use of machinery increases our comfort. It has recently given us the telephone, the telegraph, the daily newspaper, the trolley, the automobile. Nearly every new invention is a machine and in every case a machine makes it. The same is true of the aeroplane, the submarine, the phonograph.

Already our dependence upon iron is so great that if we were suddenly deprived of it we would drop back almost to the living conditions of Jacob and Esau. Food would no longer be easy to get, nor coal, nor wood, nor wool and cotton. Famine would wipe out the human race as an eraser removes chalk marks from the blackboard and where there are now 100,000,000 men there would be but 5,000,000.

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LESSON C-II. THE EFFECTS OF MACHINERY ON RURAL LIFE.¹

We do not always remember that a great deal of the work on a modern farm is done by machinery. We know that a factory is a collection of machines, and we can easily see that city life depends largely on the use of such machines as trolley cars, street sweepers, and elevators. The farmer, however, seems to most people to be different from the mechanic and to depend for his livelihood on the soil and on the work of his own hands.

THE FARMER USES A GREAT DEAL OF MACHINERY.

The fact is that the farmer is really very much of a mechanic. He is certainly more of a mechanic than most tradesmen. The farmer has to be able to use a great many different kinds of machines and to make all sorts of repairs on them. This has not always been true, but it is true of the modern farmer.

The reason for the rapid increase in the use of machines on the farm is the same as that which led to the use of machinery in other industries. Machines make it possible for one person or several persons to get work done faster and better than was possible when these people did the work without the help of machines. The digging stick was a very simple invention used by primitive man. It made possible greater results in digging out roots than its owner could secure with his unaided fingers. A hoe is better than the digging stick, and it must have seemed a marvelous instrument when it was invented. The plow is better than the hoe as a means of turning up soil. At first it was very crude and was pulled by human beings. Later it was better made and was drawn by animals. With each improvement it gave greater results. When drawn in "gangs" by traction engines the results are very great indeed.

The importance of farm tractors is well shown by the use England made of them last spring. The matter of spring plowing was vital to the people of England because the submarines threatened to cut off food coming from the Americas and Australia. The Government supplied tractors to the farmers and in many cases kept them at work nights as well as days.

¹This lesson was prepared by John M. Gillette, professor of sociology, University of North Dakota. It shows that machinery is quite as important on the farm as in the industries of the city. Furthermore, the indirect effects of the use of machinery in changing the mode of people's lives in rural districts are perhaps more apparent than the social effects of the use of machines in cities.

THE GAINS FLOWING FROM THE USE OF MACHINERY.

Machinery is a great aid to man because it enables him to use forces he could not otherwise use. A good illustration of this fact is seen in the steam engine, which is a device for harnessing the expansive force of steam.

Before the time of improved plows, harrows, seeders, harvesters, cultivators, and thrashers, a few acres of land kept one man very busy during a producing season. To-day one man with the aid of modern implements and with occasional help can care for 80 acres of grain, and in some cases even more.

The extent to which machinery increases production was shown at the Paris exhibition as early as 1855 when a test was made of the thrashing ability of men as compared with that of various makes of mechanical thrashers. Six men began to thrash with flails at the same time the machines began work. At the end of half an hour the record stood as follows:

Six thrashers with flails produced 60 liters of wheat.

Belgian thrasher produced 150 liters of wheat.

French thrasher produced 250 liters of wheat.

English thrasher produced 410 liters of wheat.

American thrasher produced 740 liters of wheat.

While this experiment dealt only with the thrashing of grain, there can be no doubt that the same kind of result comes from the use of better plows, harrows, cultivators, and other implements. It is stated that in 1830 it took 6 days' work to produce 20 bushels of wheat on an acre of ground, while now with improved machinery the same results may be attained in 3 hours and 19 minutes.

1. Do we always use tools or machinery in making things? Can you name a single case where we usually produce things "with our bare hands"?

2. Why does machinery make it possible for one man to till a large number of acres? What does this mean with respect to the best size of farm for a farmer to own?

3. "Machines may be used instead of physical labor, but they can never take the place of mental labor." Is this true?

4. Are you sure that it is cheaper to make things by machinery? Remember that machines may cost a great deal.

5. What is a mechanic? Name as many different kinds of mechanics as you can.

6. The war has reduced the number of workers available for nonwar purposes. What effect is this likely to produce on methods of farming?

This ability which the machine gives man to cultivate more acres and to raise a greater quantity of produce results in the possibility of an easier life for the worker and in greater rewards for his labor. The Nation gains because it has more of the things on which life depends.

MACHINERY MAKES POSSIBLE A LARGER POPULATION.

Let us notice some of the ways in which the larger use of machinery is of advantage to the Nation as a whole. For one thing, it makes possible a larger population. People must, of course, eat, and increased food production through the use of machinery makes it possible to provide food for a larger number of people.

Since the western world has adopted a more scientific method of farming, the population has increased greatly. A century ago European nations had about all the inhabitants they could support by the methods of producing crops then in use. But during the nineteenth century scientific agriculture and machinery of an improved type came into use. In this same period the population of those European nations doubled or trebled in number. Moreover, the larger populations were even better supplied with the necessities of life at the end of the period than they were at its beginning. This was due in part to opening to cultivation our rich western lands, but machinery may properly claim a large share of the credit. Indeed, it was machinery in the form of improved transportation facilities which was largely responsible for the rapid development of the West. Once these western lands had been opened up, farm machinery made possible a large output of products.

1. "A large population is not necessarily a good thing. Mere size is not as important as happiness and efficiency." Do you think this is true? Has machinery made people happier and more efficient?

2. Work up a list of the tools which were used in producing wheat in 1800.

3. Who invented the harvester? Do you think the harvester had any effect upon the quickness with which the central and western parts of our country were settled?

4. In what ways should you expect the locomotive to affect the amount of population? How does it affect the amount of food available for each person?

5. Compare the population of the United States under Indian culture with that under present farming methods. Which population is larger? Which is better fed?

The advantage to the worker comes in the fact that the heavy labor is done largely by machine power and human drudgery is much lightened. The farmer's work is easier now that he uses machinery in preparing the soil and planting the seed, in cultivating and harvesting his crops, in thrashing wheat and husking corn, in hauling, pitching, stacking and storing hay, in picking, seeding, and baling cotton, in spraying vegetables and fruit, and in many other kinds of farm activities.

MECHANICAL HELPS FOR THE FARMER'S WIFE.

The work of the farmer's wife has been made easier by the use of many kinds of machines used in the home, for we must not leave out of our list of machines the new domestic devices which are nowadays common. Improvements in methods of heating and lighting and of bringing water into the house save much "fetching and carrying." Machines are used to separate milk and churn butter, to mix bread, to launder clothes, and to sweep floors. These machines, together with better methods of refrigerating, cooking, and canning, free the farm woman from the routine and drudgery which formerly were her lot and make possible greater comfort for all the family.

Besides this, much work is now done in factories which was formerly done by farm women in the home. Carding, spinning, and weaving of wool, the making of carpets and clothing were formerly all done in the home. Even as late as 1880 there were more than 300,000 women in the southeastern part of the United States who were still producing cloth by the old methods. It was estimated that the same number of persons employed in modern cotton factories would produce one hundred times as much cloth. It is not surprising that a steady drift of such industries from the home to the factory has taken place. This, of course, means

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1. What is a silo? Does it save farm labor?
 2. What is a milking machine? Under what conditions is it used?
 3. How does a family on the farm get ice in the summer?
 4. What is an incubator? It does not save human energy. Why is it an advantage to the farmer?
 5. What use can be made of a gasoline engine on a farm?
 6. Are electric lights possible on a farm? If so, under what conditions?
 7. What inventions have made grain farmers in Russia, Australia, Argentina and the United States competitors?
 8. Why was the windmill one of the earliest sources of power on the farm?

that these industries are now conducted primarily in towns and cities rather than on the farm.

There is still hard and unpleasant work which must be done, indoors and out-of-doors, on even the most modern farmsteads, but the life of men and women and boys and girls on farms is surely easier and brighter than formerly. The farmer and his family have now as never before time which they may spend in reading, study, and recreation. The wider use of machinery in the fields and in the farmhouse in this way results in time for self-improvement and enjoyment.

HOW TRANSPORTATION HELPS THE FARMER.

The machinery used in raising crops is only a small part of the machinery which concerns the farmer. Crops have to be hauled to market. A wagon road, a canal, and a railroad are all mechanical devices of the highest importance to the man who raises crops as well as to the man who buys produce in the city market.

Think how the steamboat and railway have transformed farming and farm life. Before their advent farmers lived apart on very small farms and produced crops which were mainly used on the farm itself. When the steamboat came, people settled along navigable streams and began to ship their crops to distant points. Abraham Lincoln took goods from Indiana to New Orleans on a flatboat. The big river boats that now navigate the Ohio and Mississippi Rivers transport produce much faster. What the boats do for the farmers along large streams and lakes the railways accomplish for farmers everywhere. Farmers long since ceased to consume all they raise. They send food and textile

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1. What recreations are possible in the country? In the city?
 2. Can you name any mechanical devices which help us enjoy our leisure time?
 3. Has the modern steamship had any influence on agriculture in districts far from the seaboard?
 4. What influence has the telephone had on rural life? Would you say it helped more in a business or in a social way?
 5. Is the telegraph of concern to farmers? If so, how?
 6. Name 10 things which were formerly made in the home and are now made in factories,
 7. Farmers are said to be very slow to understand the war and their relation to it. What are the relations of an inland farmer to the war?
 8. How does the farmer share in the expense of improvements that affect the whole country?

stuffs to all parts of the world. World markets were brought into existence by transportation facilities and wheat growers in America, Europe, and Australia all send wheat to the thickly populated countries of Europe.

Thus the farming populations were brought into commercial relationships with all civilized mankind. The farmer no longer lives and works merely for himself and his family. He produces for the world, and his prosperity depends on the prices the world can pay for his products and the possibility of shipping what he raises to those who need it.

This means that the farmer is concerned with many things which happen outside his rural neighborhood. He must study social conditions and learn how he may improve his lot. He must understand how freight rates are established, how prices are set, how laws are passed, and many other facts. He must learn how to cooperate with other farmers to improve their business interests. He must realize that he is part of every international situation.

THE GOOD-ROADS MOVEMENT.

What is true of waterways and railroads is true of the country roads near the farmer's home. A farming district is often completely transformed by the building of a good wagon road. Country inhabitants in the past have been willing to put up with rough and muddy roads, though these roads were inconvenient for farmers as well as for others who had to use them. Bad roads make large loads and rapid travel impossible. They use up wagons, harness, and horses. Crops often can not be taken to market when prices are highest. Such roads place a barrier against visiting,

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1. What is meant by "the farmer as a business man?"
 2. What constitutes a good road? What methods are used for constructing roads in your section of the country? Who pays for roads?
 3. In what ways do the interurban electric railway lines benefit the farmers?
 4. Find out what macadam roads are and why they are so named.
 5. What is a consolidated school? What advantage has the consolidated school over the "little red schoolhouse?"
 6. "The early settlements in our country were along the seashore or navigable rivers." Why?
 7. When were rural free mail deliveries introduced? Did the postage on letters increase when this was done?
 8. Describe the parcel-post system. Of what benefit is it to farmers?
 9. To what extent has the automobile come into use in the country?

church attendance, and the transportation of pupils to consolidated schools. When rural mail delivery was established the farmers in many districts had to improve their roads before the Government would carry their mail.

The good roads movement has been helped by the introduction of the automobile. The farmer who was separated from his neighbors and the market a few years ago by a long heavy road and the necessity of a tedious drive is to-day in many parts of the country able to make a rapid trip in his automobile over a smooth road.

BENEFITS TO BOTH COUNTRY AND CITY.

The development of better means of production and transportation has served to unite the people of the country with those of the city in such a way that benefits flow in both directions. The country can supply the city with the raw material needed for the city's industries. In the earlier days when farming was done largely by hand, the cotton crop was not enough to supply such a great number of factories as we have to-day. The mills which in our day grind flour would not be able to get grain if the wheat crop had not been enormously increased by machine methods.

On the other hand, the farmer's family gets the benefits of the city's production in the newspapers and books which come to them through the rural free delivery in the cloth sent from the textile mills and in the furniture and household conveniences brought from the neighboring cities.

THE MOVEMENT TOWARD THE CITIES.

Four hundred years ago nearly all the people of England were rural. Now three-fourths or four-fifths of its inhabitants are city

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1. What inventions help unite people in the country?
 2. What inventions help bind country people to city people?
 3. What is an agricultural college? What is an agricultural experiment station? How have these improved the conditions of farming and rural living?
 4. What reasons can you give for the movement toward the cities other than the one given in the lesson?
 5. "Machinery has increased the possibility of interchange of goods and ideas." How? Why is it important to have this interchange?
 6. "Machinery has made life more varied." Explain how.
 7. The Government has in many ways interested itself in improving the farmer. Why should the Government be especially interested in the farmer?

dwellers. The same is true to a less degree in Germany, Austria, France, and other advanced European nations. In 1790 about 97 per cent of the people of the United States lived in open country and small towns; now only about one-half are so located.

One reason for this movement toward the cities is that the conveniences of life and its enjoyments have in the past been more easily obtained where there are great numbers of people living together. Machinery on the farm and better transportation are rapidly making it unnecessary to bring everybody into the city to enjoy the comforts and advantages of social life.

THE RURAL LIFE COMMISSION.

A few years ago there was a rural life commission which studied all the problems of the rural community, including the isolation of its people and the need of introducing into rural homes more of the things that make city life attractive. This commission was one of the early steps in a general movement which can be described as a movement to bring to the farm all the advantages of modern life.

PROGRESS WROUGHT BY MACHINERY.

The examples which have been given show that nowhere is it truer than in rural life that machinery has brought change and progress. Machinery has increased the production of the goods which people use. It has increased the population of the world because it has provided greater means of support. It has increased the possibility of interchange of goods and of ideas, thereby binding together populations which have lived apart as separate and distinct groups. It has increased the migration of individuals and peoples, thus equalizing opportunities throughout the world and breaking down racial and national prejudice. It has equalized the opportunities of rural and city life and by relating the two more intimately has improved the conditions of living in all districts.

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LESSON C-12. PATENTS AND INVENTIONS.¹

“Patented September 20, 1901.” “U. S. Patents, April 11, 1899; April 14, 1903. Other Patents Pending.” “Patent Applied For.” “Trade Mark Registered, U. S. Patent Office”. Such inscriptions as these we see every day on the articles we buy and use. The ones quoted are selected at random from a bottle of glue, a camera, a box of shaving powder, and a fountain pen, all of them well-known much-advertised brands. We have all seen many such announcements on labels and yet we scarcely notice them.

WHAT A PATENT IS.

Yet all these references to patents and trade-marks on everyday articles and on the various kinds of machines in use on every hand point to the protection that our Government gives to those who invent or discover anything that is useful to the country.

The word “patent” means “open; made public.” Inventions often start as secret processes; when they are patented they are made available for the common good, while at the same time the inventor’s rights in his discovery are protected. Thus patents and the protection they give inventors are devices of the Government to encourage the invention of better means of satisfying our wants.

In our country a “patent,” or “letters patent” as it is sometimes called, is a document issued by the Patent Office in the name of the United States Government granting to an inventor the exclusive right to make, use, and sell his invention for a period of 17 years.

This policy is a very old one. It had become a definite practice in England in the sixteenth century. In those early days there were evils connected with the practice. Sometimes the king was not so anxious to protect the person who had made a useful discovery or invention as he was to give a court favorite the chance to make a great deal of money by having the exclusive right of making and selling something used by the people. A patent would give such an exclusive right. As time went on these evils disappeared.

The need of an inexpensive patent system is shown in the story of Samuel Crompton, an English weaver of the time of our Revolutionary War. This was in the days when weaving was done on hand looms in the homes of the weavers.

¹ This lesson was prepared by George A. Mirick, Cambridge, Mass. It shows the way in which the Nation aims to encourage inventions. Patents have made it possible for an inventor, through Government protection, to get the benefits of his new ideas.

THE STORY OF SAMUEL CROMPTON.

Samuel lived with his widowed mother and a crippled uncle in an old mansion called "Hall in the Wood," on the edge of a village. A loom stood in the corner of the living room. To help earn the daily bread, Samuel was taught how to weave as soon as he was strong enough to work the loom.

Samuel became much interested in his work and in his loom. The very difficulties of the work fascinated him. He studied these difficulties and dreamed and planned how he might overcome them. What bothered him most was the constant breaking of the thread. Every two or three minutes he must stop to piece the ends together. He began to wonder whether it might not be possible to make a machine that would spin a stronger yarn.

For five years he experimented, working alone and in secret. When his machine was perfected he began to spin a fine thread, which he used in making muslin. This was a finer, stronger, and more elastic yarn than had ever been spun before.

After a while Crompton found it profitable to spend all his time spinning, for all the weavers roundabout came to him for his better yarn. The other spinners found it difficult to sell their yarn. This caused great hardship, for they were poor people, living on the small profits of their spinning.

THE NEED OF A PATENT SYSTEM.

Here was an unfortunate situation. Crompton guarded his secret because he felt that with the monopoly it gave him he could earn enough to repay him for his years of hard work. The rival

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1. Copy several trade-marks and notices of patents that you may find on various articles. Discuss in class any points of interest regarding them.
 2. Make a list of the privileges granted to a patentee.
 3. If you had patented an invention and some one used it without your permission, how could you stop him?
 4. Some inventions are not patented, but are kept as trade secrets by some establishment that gets control. Why is this done?
 5. In what sense is a patent to be regarded as property?
 6. What is a copyright? How long does it run?
 7. What kinds of production can be copyrighted?
 8. Is there an international arrangement about copyrights and patents? What has happened in this matter during the war?
 9. The Babcock Milk Tester is the case of a valuable invention which was given to the public. Look up the history of this.

spinners fought hard for the means of livelihood. They even threatened to break into Crompton's house and destroy his machine if he would not share his discovery with them. Moreover, we must remember that an invention is no individual matter, nor merely a neighborhood matter. It was of concern to everyone that a better method of making yarn had been discovered, and it was holding back the progress of the art of spinning when only one man was using the best method.

What was needed was some strong power that could step in and settle the difficulty to the satisfaction of all concerned and that could guarantee to Crompton a reward for his perseverance in discovery, to the other spinners a means of earning their living, and to England and the world the advantage of the better cloth. The power which regulates difficulties of this general type is the Government, and the device which it uses in this particular kind of a case is the patent.

Patents were known in those days but they were very expensive. They were granted under the authority of the king, and an inventor who was poor very frequently had great difficulty in laying his ideas before the ruler.

Crompton had no money to secure a patent, and it would have taken some time for him to earn enough with his spinning. So he agreed to show his neighbors his new machine for £60. Later the invention was used all over England, and in 1812 Parliament granted him £5,000 for the contribution he had made to the spinning industry.

Crompton's invention is indeed the property of the world. It is still the foundation of all modern systems of spinning. It has helped to earn wealth for manufacturers, but what is more important, it has helped make good cloth for all of us.

1. Some inventions displace labor at first but later give increased opportunities for work to thousands of people. Mention some such inventions.

2. Other inventions interfere with no established industry but create new occupations. Mention some of these.

3. Crompton became interested in improving the spinning machine because he worked with it. Do all workers aim to improve the machinery with which they work? Explain the meaning of your answer.

4. The passing of general laws about patents is much more just than the individual treatment of each case by the king and parliament. Why?

5. Instead of selling a patent outright, some inventors arrange to receive a royalty. What does this mean?

THE WORLD NEEDS INVENTIONS.

We shall understand better how much it is to the Government's interest to encourage invention by protecting the interests of the inventor if we recall the benefits that great inventions have brought to our country.

Several years ago one who had made a study of this subject wrote:

With few exceptions all the important mechanical discoveries of the century, which have promoted the development of this country and have uplifted the entire human race, have originated under and are the direct results of our patent laws. This country had produced the steamboat, mowing machine, reaper, air brake, gimlet-pointed screw, telegraph, phonograph, telephone, Atlantic cable, vulcanized rubber, cotton gin, photograph films, cash carriers, linotype printing machine, heavier-than-air flying machines, most of the electric power developments, electric lighting, Harveyized steel, machine-made watches, McKay shoe sewing, and thousands of less well-known improvements in practically every branch of agriculture, manufacturing, transportation, and domestic utilities. Few of these things would have ever seen the light were it not for the promise of the reward, which is the mainspring of human endeavor, held out to the public through our patent laws.

PATENTS IN EVERYDAY LIFE.

To realize more fully how closely the benefits of our Government's patent policy touch us all, we need only look about us. If we take, for example, our kitchen at home, we shall find it was built by the use of patented machines and tools, and its furnishings, its conveniences, and comforts, are the products of

1. The writer who has been quoted states that "the reward (meaning money), which is the mainspring of human endeavor," etc. He evidently believes that money-making is the great motive that induces one to invent. Is this true? What different motives can you think of that induce people to do useful work?
2. Do those employed by the Government receive money for their inventions? Why do they make them?
3. Many inventors are giving their inventions without cost to our Government to-day for use in the war. Why?
4. Make a list of the products of inventions in your schoolroom.
5. Show how life has been changed in your community by the telephone.
6. How has the invention of mechanical cash carriers in big stores affected the opportunities of children to earn money? Is this a good or an evil result?

patented inventions. Every room in the house, including the cellar and attic, is really a museum in which are displayed the results of inventive genius. How our ancestors, living 100, 200, and 300 years ago, would wonder at the changes in our homes and home life since their day!

One writer has said:

We can not make a movement without touching a patented article. Asleep or awake we are surrounded by patents. They attach themselves to all our duties, studies, and recreations; they are with us in our travels on foot, in vehicles, by railroad, or by steamboat; they cling to us in the shape of clothing and jewelry; they enter into remedies for our diseases.

Inventions have changed the whole life of our country as well as our individual and home life. They have harnessed the mountain streams and built up great factories and thriving cities on the hillsides and on level lands once used for pasture and garden. Inventions have destroyed the simple home occupations by which people used to earn their living; they have made people learn new trades and spend their lives in factories and huge department stores. All of these changes have not been made without great hardship to many, but the advantages have been greater than the disadvantages, and we are healthier, happier, and have more opportunities than people ever had before in the world's history.

THE BEGINNING OF OUR PATENT SYSTEM.

It will be worth our while now to study the practical workings of the patents system of our Government. We shall find in our

1. When shoe machinery was introduced, how did it affect the man who made shoes at home by hand? Did it offer to people fewer or more opportunities to earn money? How did it affect the price of shoes? State other advantages and disadvantages that came with shoe machinery?
2. How do our National and State Governments protect those who work in factories?
3. How do State, city, and town governments protect people against automobile accidents?
4. Look up in a public library the report of the Patent Office and tell what it contains.
5. If two people claim the same invention, how is the question settled?
6. What is meant by infringement of a patent or trade-mark?
7. When a copyright runs out, may anyone use an author's writings?

Constitution under the heading "Powers granted to Congress" the following:

8. To promote the progress of science and the useful arts, by securing to authors and inventors the exclusive right to their respective writings and discoveries.

It is interesting to know that George Washington was not only an inventor of no mean ability, but that, as the first President of our country, he urged the passing of a patent law in his first address to Congress. A law to accomplish these results was passed in 1790. During that year only three patents were granted, and during the first three years after the passage of the patent law only 57 were granted.

In those days it was the business of three cabinet officers to consider applications for patents and to decide whether they should be issued or not. One clerk could attend to all the duties of the office by giving only part of his time to them. But the inventive genius of the American people grew rapidly under the protection of the patent law, and in 1836 a new law was passed creating the Patent Office with a Commissioner of Patents at its head.

THE PATENT OFFICE TO-DAY.

The Patent Office to-day is a large and busy organization. The Commissioner of Patents has a staff of nearly 1,000 persons, including examiners, clerks, translators, librarian, draftsmen, copyists, messengers, and others.

The number of patents granted is increasing every year. In 1911 the one million mark was passed. Now 500 to 700 patents are issued every week, and there are always about 20,000 applications awaiting action.

1. Inventors are frequently poor business men. Is it the fault of our patent system if inventors do not make good bargains with their patents?

2. What is the main reason for a patent system, the protection of inventors or the encouragement of invention?

3. Why should not an inventor start in business on a small scale rather than sell his patent to a corporation?

4. Patents are granted by the Federal Government. Would it be better to have them granted by the various States?

5. Do you know any one who has received a patent for an invention? Have you ever heard of an inventor who was very poor? Of one who was very rich?

HOW TO GET A PATENT.

The Patent Office has issued a small pamphlet entitled "Rules of Practice in the United States Patent Office." In this pamphlet may be found the following paragraphs:

A patent may be obtained by any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof.

Applications for letters patent of the United States must be made to the Commissioner of Patents. * * * A complete application comprises the first fee of \$15, a petition, specifications, and oath; and drawings when required. * * * The petition, specifications, and oath must be in the English language.

Every application for a patent is examined by the Patent Office experts to determine whether or not it is a useful invention, and different enough from previous ones to warrant classing it as new. There may be many previous inventions that are similar. The new invention must be compared with them all before a patent is granted or denied.

An inventor often has to make a comparison of his own invention with those in the same line which were made earlier. This is often a very difficult process, for hundreds of inventions may have preceded his, as in the case of cotton-weaving machinery, steam engines, etc. To assist him he may employ a patent attorney. These lawyers are specially trained to give expert advice in matters pertaining to inventions and patent laws, and to put applications, etc., in the approved forms.

When the Patent Office decides that an invention is patentable, the inventor must pay another fee of \$20, and a patent is issued giving him the exclusive right to make or use his invention for 17 years or to sell his rights in it to someone else for the same period

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1. Find out what kind of descriptions of the invention must be filed when application is made for a patent.
 2. Would it be just to later inventors to allow the patent of a very general, loosely defined idea?
 3. There are certain natural devices which can not be patented. Why?
 4. It is said that only one out of a hundred of the patents granted becomes commercially profitable. Is it the duty of the Government to decide whether a patent is going to be profitable?
 5. How is this question settled?
 6. The lesson mentions the possibility of an inventor not being able to provide the funds necessary to build a factory and to provide working capital. What is meant by working capital?

of years. No one may use his invention without his consent, which usually involves the payment of a fee, called a license or royalty fee. If anyone violates this right, the inventor may bring suit, and the courts will award him royalty and damages.

IS THE SYSTEM SATISFACTORY?

It is very often stated that the United States patent laws are the most liberal in the world, and that as a result the United States leads the world in invention. This is probably true, but we must not think that the system is perfect.

It is often difficult for an inventor to get what he has made on the market. Sometimes he encounters difficulties because other inventors have conflicting interests, and a long legal process is necessary with patent lawyers and much investigation of other claims. Sometimes the inventor himself has not the capital necessary to build the factory and provide the working capital. Cases are not rare in which inventors have sold their patents at a very low price to others who have made a great deal of money out of the use of the patents. Sometimes patents are bought up by monopolies who do not use them, although they are very good ones. The reason for this is that a great deal of old machinery might have to be thrown away if the newly patented machinery came into use. By buying the patents the monopoly prevents competitors from using the new machinery and then the monopoly goes on using the old until they are ready to replace it. This may be unfortunate for the public.

Not all these difficulties can properly be charged against our patent laws. But whatever the difficulties, it is evident that the Nation is interested in working out some method by which anyone who has ideas useful to the whole community shall be protected in his production of what he has invented. Then we must take care that these inventions shall be made immediately useful to the community as a whole.

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Chapter IV.

NATIONAL CONTROL AND FOOD CONSERVATION.

The lessons in this chapter describe some of the ways in which the National Government participates in the affairs of the country.

When our Nation was established a great many excellent men thought it would be dangerous to give much power to the National Government. They feared that a despotism might arise which would "crush the liberties of the people"; and in framing the Constitution great care was taken to prevent the National Government from becoming "too powerful."

That fear of oppression by the Government which we ourselves have created has disappeared. The feeling has grown that in everything which concerns the people of all the sections of the country the National Government must direct, lead, or assist. No other agency could well handle business of so wide an extent, and no other agency could have the complete confidence of the people. That confidence is of the utmost value in great emergencies like the present war. The representatives of the people have given the President almost unlimited authority, because they know that the Government of which he is the head will in all things do what is for the good of the whole Nation.

The people of the country approve what Congress has done, and they support the President with affectionate loyalty. He has complete control over all food supplies and all fuel; he controls the railroads and telegraph lines; it is in his power to regulate all manufacturing and all forms of business by the use of his authority in one way or another; he can rearrange any of the functions of the executive departments according to his judgment; large sums of money are appropriated which he may spend absolutely as he sees fit. Yet nobody fears oppression, and nobody thinks that Congress was unwise in giving so much authority to the President.

Those who have studied the history of the Revolutionary War know that George Washington had a great many unnecessary troubles because the new nation was not well organized, and he could not always get men and supplies when he needed them. There is no such difficulty in this war. The people have learned to work together for the common good, and the Government which they have established is their efficient agent.

LESSON C-13. MARKET REPORTS ON FRUITS AND VEGETABLES.

Based on material procured from the Bureau of Markets, U. S. Dept. of Agriculture.

The Parish of Tangipahoa in the State of Louisiana produces more strawberries than any other district of equal size in the world. The prosperity of the whole community depends on the strawberry crop. Even the school year is arranged around the strawberry year; vacations come at the time of the strawberry harvest, so that the children can help pick the berries.

THE MARKET FOR STRAWBERRIES.

The market for these strawberries reaches from Boston to Seattle. Great trains of refrigerator cars carry the berries north during the season in April and supply dealers in all the northern cities. The whole country is in this way brought into very intimate relation with the little Louisiana parish. Buyers are sent to Pon-

chatoula from Chicago and St. Louis and New York, and car lots are auctioned off to these people who come to get supplies for the wholesalers and dealers who furnish berries to their customers in distant parts of the country.

The people who raise the berries and the people who use them are interested in having everything connected with the crop managed to the very best advantage. But the great distances which the berries must travel, and the many people who must help get them to market, complicate matters greatly. Where the crop is raised, there are plenty of strawberries; so many that if buyers did not come and take them away the people who raise the crop could not possibly use all of them. If the railroads did not do their part or if the distant dealers were dissatisfied, the people who raise the crops would find their business ruined.

THE MARKET IS NATIONAL.

The problem of marketing the berries is the more difficult because berries are very perishable. They can not be stored like apples, and they spoil very quickly if they are not carefully handled.

The prosperity and the comfort of a great many people depend on the proper handling of the crop. But the people concerned are far away from each other, and they do not know how to let each other know their needs. For example, suppose a certain dealer in a northern city wants a load of berries. It is difficult for him to find out the condition of the crop, when it will be at its best, what price he ought to pay, and so on. At the same time

1. Find out how strawberries grow, what soil and climate they require, and where they are grown in the United States.
2. Is it of any concern to people in the city that the farmer is protected so that he can make fair bargains for his produce?
3. How is a refrigerator car made?
4. What is the difference between express and freight? Who operates these transportation systems?
5. Which needs quicker service, a car lot of strawberries or a car lot of potatoes?
6. Make a list of all the people who take part in supplying strawberries to the table.
7. What effect does the perishable character of a product have on its price?
8. What determines the price of strawberries in Chicago? In Louisiana?
9. When there is waste, what effect does it have on price?
10. Who pays for waste?

some planter may ship two carloads to the North, and it is equally difficult for him to know the condition in which his berries will arrive, the place where the demand is greatest, and the price which is fair.

The situation is very different from that which exists where a farmer loads his crop into a wagon and carries it in person to a customer in a near-by town. The market for strawberries is a national market.

THE NATIONAL GOVERNMENT ALONE CAN DEAL WITH THE
PROBLEMS.

The National Government is concerned with every large general problem of this kind. The State of Louisiana, where the strawberries are raised, can not have charge in any way of the selling end of the market in New York or Massachusetts, and the dealers who live in New York can not appeal to their State governments to get information about the crop in the southern State.

Some people may be surprised that any one should think it part of the business of the National Government to concern itself with crops and sales. Most of us think of the Government merely as a lawmaking power. The fact is that our National and local Governments are engaged at all times in improving the conditions of life of the people in hundreds of ways other than merely by passing laws. Last year the National Government of the United States spent \$30,000,000 and employed thousands of men and women in improving the agriculture of the Nation. It did most of this work without issuing any commands as to how people should work and live. It merely collected information and gave it to people. The information is so valuable that it guides men's

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1. Mention as many ways as you can in which the National Government takes a hand in the life of your community.
 2. How is the money obtained to pay for the Department of Agriculture?
 3. Who decides how much money the Department of Agriculture shall spend?
 4. The country is spending a great deal of money now in the War Department. Would it be advisable to cut down the expenditures of the Department of Agriculture? Why or why not?
 5. What are some of the commands which the National Government issues?
 6. We are asked to save food, buy Liberty Bonds, and do many other things to help win the war. Should the Government command rather than ask?
 7. What are some of the matters left entirely to local government?

activities. The Government is deep in the farming business and is helping to market produce, giving its services for the purpose of building up prosperity for planters and customers alike.

THE DEPARTMENT OF AGRICULTURE.

The work in agriculture is in the hands of the Department of Agriculture. Scattered through the States are agents of this national department and also cooperating State officers. Together these officials collect and distribute information. They make experiments in the raising of crops and the feeding of animals. They answer the call of any section of the country which is in trouble. If a disease breaks out among live stock, the specialists of the Department of Agriculture take charge with the local officials. If a crop is not doing well because it is attacked by some insect pest, the agents of the department are usually called in to deal with the matter. The department studies soils, makes records and forecasts of the weather, has a division of forestry and one of public roads. It takes up in still other divisions every problem of plant and animal culture.

THE MARKET NEWS SERVICE.

We can not study here all these different activities. We must be satisfied to take up a single example. We come back for this example to the strawberry region in Louisiana. In its efforts to promote the prosperity of this part of the country and of the markets where berries are sold, the Department of Agriculture sent a man in 1914 to study the crop and the conditions of its production and marketing. The particular division of the department which undertook this work is called the Bureau of Markets. This man found that one essential to successful marketing is quick information passing between producers and dealers.

So the Market News Service, as it is called, was started. At the department buildings in Washington a telegraph office was opened. Here news is received daily of how many cars are shipped

1. Describe a weather map. How is it prepared?
2. Find out from the library how one can get into contact with the reports of the Department of Agriculture.
3. Who is the head of this department at the present time?
4. What is his relation to the President?
5. What other departments are there?
6. Find out what are the activities of at least one other department.
7. What is a bureau?
8. Show in detail the way in which information helps marketing.

from the various strawberry regions, where they are going, and what prices are paid for berries. From the big city markets reports go to Washington of how many cars arrived and what wholesale prices they brought. The central office then wires the news to its representative in the producing district and to any group of producers who think the news worth the price of a telegram. This information enables the growers to sell their strawberries at a fair price and to supply many more northern people with berries, because the crop can be shipped where it is most needed. In 1915 Louisiana shipped car lots of strawberries to more than 60 markets, and the other strawberry-producing areas sent carloads to 239 other cities and towns in the United States. Of course, many shipments were made in less than carload lots from the various strawberry districts or from the big cities to which carloads had been sent.

GROWTH OF THE MARKET NEWS.

The advantages of market news are so evident that the department has rapidly increased its services. In 1915 the service was conducted for only strawberries, tomatoes, peaches, and cantaloupes. The growers of these fruits and vegetables were so eager for the news the service supplied that it has been extended to onions, watermelons, grapes, potatoes, apples, honey, cabbage, celery, cherries, lettuce, pears, sweet potatoes, and dry beans. Shipments of cranberries were also reported this last Thanksgiving season, and eggplant and citrus fruits are now being added to the list for the benefit of the Florida growers.

The bureau now has branch offices in 24 cities, including New York, Chicago, Boston, Pittsburgh, Buffalo, Cincinnati, Detroit, Minneapolis, St. Louis, Kansas City, and Denver. During the past year over 80 temporary field stations were established in

1. "The Market News Service has been most valuable in assisting growers' organizations to plan selling campaigns intelligently, in promoting better understanding between growers, shippers, commission merchants, and consumers, and in enabling growers to have an accurate check on daily f. o. b. prices." What does each of these mean? How are they advantages?

2. Is the Market News Service of any benefit to the railways of the country? To the merchants in the markets?

3. Describe the telegraph. How are messages sent by telegraph? How does the telegraph differ from the telephone?

4. How many of the fruits and vegetables mentioned are raised in your State? How many are eaten in your town?

districts producing the fruits and vegetables mentioned. During the season of heaviest shipment from the district about each field station, Uncle Sam's representative is on duty to bring to all the producers the most up-to-date information the Government can get on the crop they are handling.

Through the night the division superintendents of the railroads in all parts of the country report by telegraph how many carloads of fruits and vegetables have been loaded in their territory during the day and the stations to which they are going. Early in the morning the branch offices report how many cars have been opened in their cities and the wholesale prices of the products. In cities where there are as yet no branch offices of the Market News, similar information is obtained through other agencies.

A BUSY OFFICE AT WORK.

The central office of the Market News on the seventh and eighth floors of the Bureau of Markets in Washington is a busy place. The office force goes to work at 6.30 on Monday mornings and 7 on other days to summarize the reports which have been coming in all night. By 9 the central office is ready to send back to the branch offices and the field stations all the reports which have come in in which they are interested.

Special leased wires have been obtained from the telegraph company to handle the messages from the branch offices and field stations. The wires are arranged in circuits in an ingenious way, so that when the Chicago office reports to Washington the conditions in the Chicago market, Columbus, Cincinnati, and all the other offices on the same circuit take down the report, too, and do not have to wait for it to be sent back from Washington. It is as if they were all sitting around a table and each one heard what the others reported to the chairman at the head of the table.

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1. What is a leased wire? Why does the Government not set up its own telegraph system?
 2. What is a code? If you do not know, go to a telegraph station and get some information.
 3. Messages are sent to our ambassadors in code. Is the purpose the same as in the case described in the text?
 4. Why is the country's capital at Washington?
 5. Washington is not the center of the country. Would it be better to have the news service at the geographical center of the country?
 6. Agriculture is a very old art. Why should the methods now suggested be so new?
 7. What is a Government expert?

The reports to the branch offices and field stations are sent in a special code, not to keep the message secret, which is the purpose of some of our Government codes, but because a great deal can be said quickly by means of a code. Of course, the greatest need of any news service is dispatch. As soon as the branch offices receive the reports, they translate them into English, post a copy where anyone can see it, and by means of a duplicating machine make copies to send to everyone in their district who is interested. If a farmer wishes quicker service, he can arrange to have the information wired to him from the nearest field station or branch office at regular telegraph rates.

GOVERNMENT NEWS COMPLETE.

There are two facts about news supplied by the Government which should be especially noted. In the first place it includes more information than could be obtained by any private concern or by any State. The interests which are represented by this service are National. What we mean by calling the Government at Washington a central Government is clearly illustrated in this case. The National Government is the center around which all the large interstate activities of the country are grouped. To this center people must look for information and for help in all matters that involve different sections of the country.

GOVERNMENT NEWS IMPARTIAL.

In the second place it is essential that information of this kind be impartial and equally usable by all kinds of people. If information were collected in the interests of those who raise the crops, it might not be equally useful to those who sell the products. If the information were collected merely in the cities where the products are sold, producers might be slighted. The information collected by the Government is of the most complete

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1. What would be the effect of incomplete information?
 2. We read in the papers from time to time how much is produced in each crop. What is the value of this information?
 3. What use has the Government made of crop information this year in connection with the war?
 4. Why is the Government more active this year than ever before in dealing with crops and other food supplies?
 5. The Department of Agriculture is this year making a food survey. Why is this desirable?
 6. The German Government has taken charge of all the industries of its country. Does this help to explain its ability to carry on the war?

kind and is wholly impartial. People can have confidence in the news and can guide their action by it.

BUREAU OF CROP ESTIMATES.

There are other news services in the Department of Agriculture besides the one described. There is a meat news service which reports on shipments and prices of meat. There is also a Bureau of Crop Estimates. Here information is collected from all parts of the country and tabulated so that there shall be exact estimates of all production. It is especially important that this information be absolutely reliable and impartial, because prices for future purchases are determined by these reports. Again, it is the Government alone that can be relied on to collect such information in a complete and impartial way.

GOVERNMENT AS A FORM OF COMMUNITY COOPERATION.

The most important lesson which we can learn from these examples of information services is that the Nation is in reality a great working union. All over the country people are producing what is needed for food and comfort. All over the country dealers are taking the products of the farm and factory and distributing them to the people who need them. There is the widest possible cooperation in which the National Government is increasingly taking a part. The first duty of every government is to furnish protection to its citizens. As soon as protection against foreign enemies and against internal disorders is provided, the Government can turn its energies to the upbuilding of national prosperity. Nature must be made to yield what we need, and cooperation must be promoted by every means possible. The Government becomes more than a protecting power; it becomes a source of scientific information, of suggestion of plans and methods for the successful carrying on of all the types of activity in which people are engaged. In short, the Government becomes the center of all national and community undertakings.

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LESSON C-14. THE UNITED STATES FUEL ADMINISTRATION.¹

It is safe to say that by the time this lesson reaches its readers the coal shortage will be such that many of the people of this country will be suffering from cold. All through the autumn and early winter the demand for more coal was heard in every part of the country. Factories were not able to run full time because they did not have coal for their engines. Railroads were making every possible effort to supply the demand, but the country was steadily running behind.

CONGRESSIONAL ACTION.

The situation was so serious in August that Congress in passing the law which gave the President control over the food supply included fuel as equally important with food. Indeed, the President was given more complete control over the production and sale of fuel than he was of any article of food. The President was authorized to take over mines or dealers' stocks of coal, if necessary, and use them in carrying on the war. He was given power to fix prices and to regulate the trade in every possible detail.

FUEL USED BY THE RAILROADS.

The reason for giving so much power to the President will be understood when we think how necessary coal is to all the work of the Nation. Let us begin with one of the first uses of coal after it is taken from the mines. Nearly one-quarter of the coal mined in the United States last year was used by the railroads in running their engines. The amount of coal used for this purpose is so vast that the figures which are set down on paper will mean very little to any of us. The amount is 125,000,000 tons.

ALL THE INDUSTRIES DEMAND MORE COAL.

This great demand for coal came at a time when the farms and factories of the country were not called on to supply an army or to send to our Allies in Europe many of the things for which they now depend on us. As soon as the United States entered the war our factories and farms were asked to increase their output as

¹ The material for this lesson was supplied by the United States Fuel Administration. The purpose of the lesson is to show why there is a shortage of coal in the country and at the same time to illustrate the way in which the National Government deals with a war-time emergency.

much as possible. Factories where guns are made, where clothing and shoes for soldiers are turned out, the canneries where food is put up—all began to work as they had never worked before. The things produced by these busy factories have to be carried to ports to be shipped, and the raw materials which the factories need have to be taken to them. The railroads found that they must use every engine and car that could be put into service. Old engines were brought out of the roundhouses and put to drawing trains. This meant the use of more coal. It is estimated that the railroads will need this year for their own use between 40,000,000 and 50,000,000 tons of coal more than they used last year. If the railroads use more coal, either the mines must produce more or this extra use by the railroads will deprive some one of his supply.

MINES MUST HAVE CARS.

There are two reasons why the mines can not easily supply more coal. First, the large mines can not work without coal cars. The ordinary method of taking care of coal at a mine is to load it directly from the tippie or chute into a coal car, which carries it away. Mines do not have places where they can pile coal. Even if they piled it, the expense of shoveling it back into cars would be so great that the mine could not be worked economically. Mines, therefore, depend on coal cars. But there are not enough cars. Even in 1916, before the United States entered the war, the shortage of cars began to be felt.

LABOR PROBLEMS.

Along with the shortage of cars comes the second difficulty. There is a shortage of workers. Many of the miners in the United

1. Why did Congress rather than the legislatures of the various States pass the law about fuel?
2. Show the importance of fuel to machine industry.
3. The railroads often own and operate coal mines. Show why this is done, in view of the facts given in the text.
4. What special things are needed by a country at war besides guns and soldiers' equipments?
5. What things must a nation at war go without?
6. Why is an old engine likely to use more than its share of coal?
7. Why would piling coal be expensive?
8. What would be the effect on industry of forcing mines to pile coal?

States are immigrants. Since the war began the stream of foreigners coming to America has stopped and our mine owners find it very hard to get workers. In like fashion, car factories are unable to get workers or the material for new cars.

Some of the workers who are now getting coal out of the mines are discontented because they find it difficult in these times of high prices to live on their wages. In a few cases they have made a bad situation worse by starting strikes, and in this way threatening to cut off the supply of coal, which is even now too small.

Even where the miners do not strike, they have not always been ready to stay in the mines. They are attracted to better-paying positions in munition factories. In other instances, miners have been drafted. The draft and the great decrease in immigration have depleted the supply of miners.

NEEDS FOR FACTORIES.

So far we have been talking only about the railroads and the mines. It is easy to imagine what is happening in the factories of the country. Think of a machine shop which has promised to make big guns for our Army. This shop must have great furnaces to melt its steel. It must have powerful engines to drive the lathes and trucks which turn the guns and carry them from point to point. Eager to finish the guns as rapidly as possible, the shop employs more workers and begins to run night and day. Suddenly the railroad notifies the managers that it can not carry all the coal which is wanted. What is the machine shop to do? Coal is as necessary to the work of that shop as food is to the human body.

We have case after case of this kind, and again the figures which represent the needs of these shops are so large that they

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1. Why was there a shortage of cars even before we entered the war?
 2. What were we selling to the European countries before the war in larger quantities than usual?
 3. What effect did the exportations have on prices in this country?
 4. What effect did they have on transportation?
 5. How are prices and transportation related?
 6. If the Government took over mines and railroads, could it provide all the labor needed?
 7. Why were immigrants very commonly used in working mines?
 8. Why do munition factories pay their workers high wages?
 9. Do other industries as well as mines lose men to munition factories?

are hard to understand. There is one large steel plant which reported an increase in its needs of 250,000 tons of coal per month. Many a factory has asked for increases amounting to 10,000 tons a month.

Nor is it steel mills and munition factories only which are asking for more coal. The mills in the Carolinas and in New England are asking for more coal because they have to make more cloth.

PRICE FIXING.

We have seen why there is a shortage of coal. Let us see why Congress passed the law giving the President power to fix prices. In the fall of 1916 the growing scarcity of coal led many people to order enough to last a year. Prices went up very rapidly and in the spring of 1917, when it seemed there would be a coal famine, no one paid any attention to price, but ordered coal from any dealer who would promise to fill the order. Bituminous coal, which had been sold for years at prices between 75 cents and \$1.25 a ton at the mouth of the mine, suddenly leaped to \$3.50, then to \$4, \$5, and even \$6.

Such a rise in the price of coal affected the price of every article sold in the country. If prices had gone any higher, most of us could not have bought the common things we must have in order to live. It was in view of this danger that Congress took the unusual step of giving the President power to regulate prices. Usually prices are regulated by the supply on hand and the anxiety of customers to buy. But here was a case of such concern to everybody that the Government stepped in and passed a law putting price regulation into the hands of the President.

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1. Make a list of the uses to which coal is put in steel works. In a cotton factory.
 2. Find out how big a pile a ton of coal makes and estimate the size of the pile needed by the factories mentioned.
 3. Many railroads have been taking off passenger trains. Why?
 4. During war times the cars and equipment of railroads are not kept in repair. Why?
 5. It has been urged that people travel as little as possible during the war. Explain.
 6. In his message the President urged the larger use of water power in the country. How would this save fuel?
 7. Railroads are supervised in setting their rates by a branch of the Government called the Interstate Commerce Commission. Why?

FUEL ADMINISTRATION ORGANIZED.

The President used his power on August 21, 1917, by setting the price which mines could charge for a ton of coal. He also appointed a Fuel Administrator as the officer in charge of a number of people who were to gather information about the coal supply and make the best plans possible for its distribution. The Fuel Administrator can not overcome the shortage and the country is sure to suffer during this winter. But something can and is being done to get coal to the places where it is most needed, to adjust matters as far as possible so that labor will be provided, and, above all, to induce people to use coal as carefully as they can.

EFFORTS TO DISTRIBUTE COAL.

Let us take a few examples to show what has been done. A great deal of coal was shipped by water to Minnesota, the peninsula of Michigan, northern Wisconsin, and the Dakotas. The Fuel Administration rushed coal to these States by way of the Great Lakes, in order to provision them for the winter before ice shut down lake traffic. It was an exciting game which the Fuel Administration played against time, as the coal which was not shipped into this territory by the lakes could not be sent in any other way, because the coal cars could not be spared for the long haul to the Great Lakes region.

Lake traffic was kept open as late as possible and when the boats had to give up making trips on account of the ice, the Fuel Administration turned the stream of coal to the States

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1. When many people want coal, show how the price rises.
 2. If the price were allowed to go up as high as people wanted to put it, what injustice would be done?
 3. What other prices has the Government undertaken to regulate during the war?
 4. Would it be proper to give city officials rather than the President power to fix prices of coal?
 5. Does the city ever fix prices?
 6. Does the city ever go into the business of producing things people need?
 7. The post office is an example of the fact that the National Government must at times do business. Why does the Government carry letters and packages?
 8. Why are water routes better for coal distribution than railroads?

farther south, which had been for the time passed over in the shipment to the Northern States.

ECONOMICAL USE.

A second step taken by the Fuel Administration was to limit such unnecessary uses of fuel as that caused by electric signs and outdoor displays of all kinds.

The Fuel Administration attended to sending cars where they could be used most effectively. It forbade the use of coal cars for such materials as gravel or stone except under special permission. It regulated the sending of cars to mines in order to keep the most productive mines working as much of the time as possible.

Perhaps the most important part of the work which the Fuel Administration has taken up is that of educating people to use coal wisely. There are a great many ways of building a fire, some of which do not seem very wasteful when one thinks only of the small amount of coal lost in a single stove or furnace, but which waste huge quantities when the whole country is taken into account.

IMPORTANCE OF SMALL SAVINGS.

For example, suppose one shakes the furnace harder than is necessary and lets six or seven pieces of coal fall through the grate with the ashes. These few pieces wasted day after day in millions of homes would make a large pile of coal—enough to keep a great many people warm or to run many large factories many weeks. Then, too, the amount of coal lost in smoke as a result of careless firing is very great.

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1. Find out about the important water routes for the shipment of coal.
 2. What other material is largely carried by water on the Great Lakes?
 3. If electric signs are unnecessary and wasteful, why do people put them up?
 4. Is the lighting of streets necessary? Is it overdone?
 5. It has been suggested that one way to save fuel is to heat houses less. What temperature is best for rooms?
 6. Can you find evidences of waste of coal in your neighborhood?
 7. What is a smoke inspector?
 8. Would it be economical always to let a fire go out when it is not in use?

So important is it that all waste should be stopped that the Fuel Administration has sent out directions on fuel economy. Furthermore, it helps the Fuel Administrators who have been appointed in the various States to get information into the hands of all the people in those States in order that there may be a widespread movement in the direction of economy.

Much of the information about economy in firing was at hand in the Bureau of Mines of the Department of the Interior, which has for years been studying the matter of economical use of fuel. The Fuel Administration has made brief summaries of the publications of the Bureau of Mines and has distributed them to newspapers and magazines. The following extract is taken from one of these circulars:

CARE OF DOMESTIC FURNACES AND STOVES.

Careless use of coal in grates, stoves, and furnaces during the war is an economic crime. Be sure that heat is doing what you want it to rather than needlessly heating unoccupied spaces and the chimney. Weather strips, double windows, pipe covering, heating drums in stovepipe and extra radiators pay. It is cheaper to use a larger radiator in the room that is always chilly or in the room that is to be kept specially warm than to force the fire. Do not let the house get too warm. Do not invest in chemical fuel savers. By care, attention, and taking pains you will save more coal than by buying cheap accessories. There is no short cut to economy.

Open fireplaces are inefficient. Use them sparingly.

Depend upon heat from the kitchen stove to remove the chill of the house as long in the season as possible.

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1. Make a careful study of the way fuel is used in your home.
 2. In some factories there are automatic stoking devices. Why are these good?
 3. The Bureau of Mines suggests the use of fireless cookers. What are they?
 4. In what department of the Government is the Bureau of Mines?
 5. The Fuel Administration points out that there will be a shortage of coal this winter in spite of everything that can be done. Where should economies begin?
 6. The shortage of coal is much less here than in France or Italy. Why do we not export coal to them?
 7. "Fuel is like food." Explain.
 8. France must have either food or fuel. Show why the two needs are alike in their effects on people.

When stoves or furnaces must be started, see that smoke passages and chimney are clean and are kept clean. If soft coal is used, the smoke passages should be cleaned every few days.

See that the air supplied under the grate can be positively controlled. Tight ash pits, tightly fitting the floor, and the grate section must have tight-fitting doors and dampers which can be closely adjusted.

Air above the fire must come in only through dampers, usually in the door. All other openings for such air must be closed.

Study the directions for running your furnace. If you do not have directions, send to the maker of the furnace for them.

Keep ashes cleaned from under the grate. The fire burns more uniformly and with less clinker with a clean ash pit.

It is best to keep a full fire pot, level with the bottom of the firing door. If the draft is poor or the coal fine, thinner fires must be kept. In mild weather the fire can be carried thinner by allowing a few inches of ashes on the grate. In cold weather keep the grate free of ash.

Attend the furnace at regular periods. Anticipate the demand for heat. Rapid pushing or retarding the fire is uneconomical.

If soft coal is used, break the lumps to fist size and do not cover the whole surface with fresh fuel. Leave a bright spot to ignite gases.

Small charges of coal frequently applied are more economical than infrequent firing, but the fire bed should be disturbed as little as possible by shaking and poking. Convenience usually determines periods of firing. Shaking and cleaning the grate twice a day is usually enough. Stop shaking as soon as it begins to be bright under the grate.

If the fire gets very low, open the ash-pit damper and add a little coal not too fine. Do not disturb the grate or ashes. When the fresh coal is well ignited, shake the grate and add more.

A fresh fire or a large fire requires air over the fuel bed as well as through it. The damper in the door is for this purpose.

To check a fire close the ash-pit door and open the check draft in the smoke pipe. Never check by leaving the firing door open.

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LESSON C-15. SUGAR.¹

The war has resulted in a shortage of sugar. We are all called on to use less of it, so that the supply which is at hand may go as far as possible.

Four-fifths of our sugar is made from sugar cane; the rest from sugar beets. Cane sugar and beet sugar, as they are called, are exactly alike when they are ready to be used. The same kind of sugar occurs also in flowers, in the stems and the roots of grasses, in fleshy roots, like carrots and sweet potatoes, and in the sap of trees, but not in quantities large enough to make it profitable to take it out. Other sugars, differing in some respects from ordinary sugar, occur in fruit and in milk, but we do not extract these in large quantities and shall not study about them in this lesson.

THE SUGAR CANE.

Sugar cane is a giant-stemmed grass, in appearance something like Indian corn, growing to a height of 8 to 24 feet, with a tassel 2 to 4 feet long. Its stem is jointed every 3 to 6 inches, like bamboo. As the cane grows it stores up sap in its stem to nourish young leaves and buds. The sap is about four-fifths water and one-sixth sugar, while the rest is made up of other substances which must be removed in making the sugar which we use.

When the cane is ready to be harvested its leaves are stripped off, for they contain no sugar. They may be pulled off by laborers or burned off, for a fire will strip a field of leaves and insects and leave the juicy stalks untouched. The stalks are cut off at the ground and carried to the mill near the sugar plantation. The upper part of the stalk contains no sugar, but has a bud or eye which will sprout if planted and properly watered. The top is usually cut off and thrown back into the earth.

EXTRACTING AND PURIFYING THE JUICE.

At the mill the cane is passed through a series of grooved rollers which break it into short pieces and mat them together into a pulp. The rollers exert great pressure and squeeze out all but a very little of the sugar in the cane. At the last rollers hot

¹ This lesson was prepared by Ruth Reticker, of the school of commerce and administration of the University of Chicago. It deals with a staple commodity and attempts to show by a study of the methods of its production and distribution how a shortage can arise. The principles of national and community production and use here illustrated can be carried over to explain like facts in other fields.

water is sprayed on the pulp to soften the fiber and aid in extracting the juice. The same hot-water spray is used over and over again, until it becomes almost as sugary as the juice which was first squeezed out. After the fibrous, woody part of the stalk has been squeezed dry by the rollers it is used for fuel to make steam to run the machinery of the mill and to keep the juice hot so that it will not ferment and will not thicken and clog the pipes of the mill.

The juice which is strained into tanks from the rollers is not at all appetizing. It must be purified by removing the dirt, cane stalk, and other foreign matter. Milk of lime is added to the juice and the mixture is heated. Some of the foreign substances rise to the top in a scum and are scooped off and some settle to the bottom. The clear juice is drawn off and filtered through wood fiber or excelsior. All the impurities are thus removed except those dissolved in the juice.

The next step is to evaporate the thin, watery juice to a sirup. This is done in a vacuum in order not to scorch the sugar. The juice is boiled until a mass of crystals begins to form in the sirup. Boiling helps to separate the sugar from the impurities in the juice, for sugar crystals, once formed, attract sugar, leaving the impurities in the solution.

When the mass is about as thick as half-formed ice it is put into a perforated brass basket which is revolved 1,000 times a minute. The liquor is thrown out through the holes, to be boiled

1. Find out from your geography where sugar cane grows, what kind of soil and climate it requires, and how long it takes to mature.
2. How is maple sugar obtained from sap?
3. What is honey?
4. Estimate the number of men who have handled the sugar you used at breakfast this morning.
5. Can you find out by reference perhaps to the crop seasons how long ago the sugar we are eating to-day was in the cane stalk in Cuba? How long ago was that cane planted? Do such considerations help you understand why we can not immediately increase our supply of cane sugar when the European beet-sugar supply is decreased?
6. Why are the dried sugar-cane stalks used for fuel? What other fuel is available in the countries where sugar is raised?
7. What is meant by fermentation and how is it prevented by heat?
8. In countries where sugar cane grows the cane itself is used without the long treatment described in the text. Why does this example not lead to the importation of cane into this country?

again, and the sugar crystals are left almost dry in the basket. Dry steam, which is then passed through the basket, makes the sugar dry enough to pack.

This is not sugar as we know it, but it is raw sugar, about 96 per cent pure, and of a dull brown color. Raw sugar stands the journey from the Tropics to the Temperate zone much better than refined sugar. It is brought to this country and stored in big warehouses in our seaport cities, especially New York, Philadelphia, Boston, and San Francisco, and is refined as needed for our use.

REFINING SUGAR.

Raw sugar must be changed back into sirup before it can be refined. But before it is melted it is washed by a fine spray of cold water directed against all the faces of the crystals as they are whirled in a machine that is called a centrifugal machine. This removes most of the impurities left on the outside of the crystals by the impure liquor from which they were formed. The washed sugar is then dissolved in hot water and the liquor is filtered through hot cloth bags to remove any impurities which have been left in the sugar from the cases in which it was imported, such as twine or lint from the Cuban bags, or fine particles of leaves from the Philippine mats or the Java baskets. Here again chemicals are mixed with the liquid to aid in making it pure.

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1. Why does the use of a vacuum prevent scorching?
 2. Is the principle of a revolving extractor used in any other process of producing food?
 3. What is dry steam?
 4. "Refined sugar absorbs moisture and so can not stand transit from the Tropics to a temperate zone." Explain.
 5. "Sugar is not refined at the plantation mills because these mills are too far from the market and have inadequate supplies of water, fuel, labor, machinery, and the commodities used in refining and packing sugar." Explain.
 6. Why is it easier to send sugar long distances in wholesale form than packed for the final consumer?
 7. The packing and shipping of sugar are important steps in the industry. Why should the packing cases be different in each country when the sugar is the same?
 8. It is clear that the sugar refiner is concerned with the manufacture of gunny sacks, paper boxes, and the machinery he uses in his factory. Can you mention any other industries in which he is interested?

The clear amber sirup which comes from the bag filters is passed very slowly through a special filter filled with bone char, or charcoal made of the bones of animals. The bone char removes the coloring matter. The whitened sirup is now boiled in vacuum pans for an hour and a half, until crystals form as they did in the raw sugar. The crystals are separated from the sirup by whirling and by washing with cold water, and are then dried by a current of hot air in an iron drum called a "sweater," until there is less than four-hundredths of 1 per cent of moisture in the sugar, and the grains are hard and bright. The crystals are then sifted through screens according to size, and at last the sugar is ready to be packed in bags or boxes or barrels, or molded into loaf sugar, or ground into pulverized sugar.

MAKING BEET SUGAR.

The sugar beet is white and shaped like a carrot, but is much larger. Sugar beets have been used for making sugar only in the past century, and mainly in Germany and France. The scientists of these countries have developed varieties of beets which have a high percentage of sugar-bearing juice, and the United States Department of Agriculture has done much to extend their cultivation in this country. In 1915 there were in the United States 67 factories, using more than 6,000,000 tons of beets and producing more than 850,000 tons of sugar.

Beet sugar is made and refined in one process. After the leaves and the crown are cut off in the field, the beets are taken by wagon or railroad to the factory. When they arrive there they are first washed. They are not crushed as the sugar cane is, but are sliced very thin by revolving corrugated knives. The

1. Why is white sugar considered a luxury in the Canadian woods and maple sugar a luxury in Chicago? Can you make comparisons in time as well as in space between the value placed upon these two sugars?

2. Can you see any relation between the present shortage in shipping and the shortage in sugar?

3. Before there were great merchant marines could the use of sugar be as common as it is to-day?

4. Can you see any relation between increasing prosperity and the increasing use of sugar?

5. Can you see any connection between the things you learned in the lesson on iron and steel and the increased production of sugar? Mention as many ways as you can in which the production of sugar is influenced by iron and steel.

slices of pulp are allowed to stand in water until the sugar-bearing juice in the pulp mixes with the water around the slices by a process called diffusion. When the juice around the slices is as sweet as the juice in the pulp, it is drawn off and poured on fresh slices and fresh water is once more poured on the pulp. This process is repeated until as much sugar as possible has been taken from the beet slices.

The juice extracted from the beets, called "sweet water," is purified with milk of lime and carbonic acid gas and is then boiled until it makes a thick sirup. Sulphur fumes, instead of bone char, are used to whiten it. Crystals or grains are produced much as in refining cane sugar. Molasses can not be made from the sirup which is left, because no way has been discovered to free it of impurities. It is fed to cattle, and the dried pulp of the beets is used as fertilizer.

1. When sugar is dissolved at the refinery the liquor is pumped to the top floor of the refinery, usually 12 or 14 stories high, so that it moves through successive steps of manufacture by gravity instead of by mechanical conveyors. Why is this economical? Where is the same principle applied to other things?

2. "Our modern life depends on specialists." How many specialists are concerned with the raising and manufacture of sugar?

3. Some industries make their product by putting materials together and some by taking materials apart. Which is the method of making sugar? Making flour? Making bread? Making steel? Making automobiles?

4. What is a by-product of an industry? Are there any by-products of the sugar industry?

5. What other foods besides sugar produce heat and energy in the body?

6. Why is sugar eliminated from the diets of persons who are too fat?

7. Italy uses very little sugar because it is a country where much wine is used. What relation is there between wine and sugar?

8. How large is the population of the United States? With the average consumption of sugar given, compute the total consumption of the country.

9. "Growing cane requires very much water. A plantation producing 35,000 tons of sugar in a year needs twice as much water as the city of San Francisco." How is this water supplied?

10. Find out from your geography where the sugar beet grows, what kind of soil and climate it requires, and how long it takes to mature.

11. Beet sugar is used in the United States mainly in California, Colorado, Illinois, Iowa, Michigan, Kansas, Minnesota, Missouri, and Nebraska. Why?

THE USES OF SUGAR.

Sugar is a food. It is thought of by many people merely as a flavoring material. In fact, for a long time it was a luxury, like spices, and was used as sparingly. It is only in the past 50 years that sugar has been produced in large enough quantities for the mass of the people to use it as a food.

The English-speaking people use more sugar than any other people in the world. In 1915 the world's crop of sugar was 20,000,000 tons, and this country used more than one-fifth of the whole crop. At present we are using an average of 85 pounds a year for each person in the country. This is more than twice as much as the average in Germany or France and several times higher than in most European countries. Since the time of the Civil War our average use of sugar has been steadily increasing about a pound a year. Sugar now comprises about 5.5 per cent of the average American diet.

SUGAR AS FOOD.

Our food experts tell us that the body uses sugar to make heat and energy. A lump of sugar can be used by the body to produce as much heat as an ounce of baked potato. In fact, the first thing that the stomach does in digesting the potato is to turn the starch which the potato contains into sugar. If one eats sugar, this step in digestion is not necessary. Because sugar can be digested more quickly than starch, it is useful in times of great exertion or exhausting labor. Because pure sugar is especially agreeable to the taste and is a highly concentrated

1. Mention all the reasons you can why the price of sugar has increased.
2. For many years the price of sugar was such as to make it a luxury. What changes in modern industry led to the low prices common before the war?
3. Mention as many substitutes as possible for sugar as a food.
4. Mention as many substitutes as possible for sugar as a flavor.
5. Make a list of all the foods you eat which contain sugar.
6. What is meant by speaking of sugar as a preservative? What materials are preserved with the use of sugar?
7. Starch is changed to sugar in nature during the processes of ripening of fruit. Can you give examples?
8. What is a concentrated food? Why is such a food likely to cause difficulty in digestion?
9. How much candy should a person allow himself in ordinary times? How much in the present war times?

food, there is danger that we may eat more of it than we need. This is the reason why people are warned not to eat too much sugar or candy. Most people in this country eat more sugar than they really need. We eat potatoes only when we are hungry; we eat candy whenever we have it. This means wasting food and wasting the energy of our bodily organs and may bring on indigestion and other ills.

We are told now that it is unpatriotic as well as unwise to use too much sugar. That is because if any of us eats more than his share there will not be enough to go around in these days of war-time scarcity.

WHY SUGAR IS SCARCE.

The shortage of sugar to-day is due to the fact that the war has taken hundreds of acres of French beet fields for trenches and battle fields, and thousands of French and German beet farmers for soldiers. Before the war England got half her sugar from Germany. Now the island plantations of Cuba and Java and the Philippines are sending part of their crop to England, France, and Italy, and our seaport refineries are called on to refine sugar for nations which never called on us for sugar before the war. Meanwhile the difficulty is increased by the fact that our own population is increasing and, as we have seen, we want more sugar each year than the year before. Our beet-sugar factories have increased from 9 in 1897 to 67 in 1915, and their product from 45,000 tons to 850,000 tons, but even these increases are not enough to catch up with our needs.

1. "Foods should be stored from a time of plenty to a time of scarcity. Sugar hoarded in the fall months of 1917 against rising prices or fear of a sugar famine will be held over into the new season." Explain. Is this a wise plan from either a personal or a national point of view?

2. One reason why our storage warehouses used to be full is that the sugar was bought and owned in this country between harvesting and refining. During this period it was capital. Why does a country have to be rich to have great storages of material?

3. What is the meaning of our reduced storage with regard to the next year?

4. Usually we do not have to pay attention to the seasons in buying sugar. Why?

5. By way of contrast tell of some things which we always think of as seasonal.

6. The United States Department of Agriculture soil analysis experts have studied the soils which sugar cane needs. Is this of benefit to the growers of cane? To any of the rest of us?

Usually our refineries and warehouses store great quantities of cane sugar, and several months elapse between its arrival from the islands and its distribution to wholesale and retail dealers and to bakers, candy manufacturers, and households. This stored supply is now very greatly reduced. We have eaten it up or put it into condensed milk to send to the front, or into jellies or preserves on our pantry shelves.

In August, 1917, we had much less sugar in the country than in August, 1916, and a larger part of that supply than usual was held by bakeries and manufactories, showing that it was just about to be used and was not stored away for future use. This means that the stored supply is getting lower and lower as we use the great quantities in the hands of our bakers, candy makers, and preserve manufacturers. We must remember that we have less sugar than a year ago to supply our needs until the new world crops are available for use, and at the same time there are 1,600,000 more people, each one wanting his 7 pounds of sugar a month.

The beet-sugar crop is in the market in December, and imports from the islands come in the early spring. This will relieve our present scarcity, but we shall have to learn to economize or there will be a shortage of sugar again, both here and abroad. Most of us use too much sugar, and it will be no serious hardship to return to the standard of 10 years ago. Yet 10 pounds less per person a year would mean that our Nation would save enough to have a reasonable supply, and still be able to help France and England.

This is one kind of national economy in which school pupils can have a very large part. They are not asked to go entirely without sugar, but are asked to save some sugar every week in order that other people, especially our allies in Europe, may have their share.

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LESSON C-16. THE COMMERCIAL ECONOMY BOARD OF THE COUNCIL OF NATIONAL DEFENSE.¹

Last August a man who was going home from his office late in the afternoon stopped at the grocery store and ordered some small packages for his family. He asked the storekeeper to send these things to his house as soon as possible and went on his way home. The storekeeper did not hesitate to do what he had been asked to do, because it is now a part of almost every business to deliver the things that are bought. If a storekeeper should refuse to deliver or should be slow about sending the things to the house, it is very likely that he would lose his customer. The man who bought the goods and the storekeeper both had fallen into the habit of thinking of the delivery of an article as a part of the business.

DELIVERIES INTERRUPTED BY WAR.

Some days later the same customer went into this store. He saw a sign hanging on the wall which said: "Don't have it sent if you can carry it home. Your country needs the men and money now being wasted in needless delivery of goods. Carry your own." He read the sign several times and said to the storekeeper that he was entirely willing to take home the small packages that he had been buying. The storekeeper told him that he would have to take them home that day if he wanted to get them, because the man who had been driving the grocery wagon for him had been drafted into the Army. It had not been possible to find another man to fill his place without taking one from a farmer or somebody else who needed the man even more, and the grocery man was wondering how he would keep his customers.

THE HIGH COST OF DELIVERIES.

At just about the time that his man was drafted a letter from the Commercial Economy Board of the Council of National Defense had come to the storekeeper in which a good deal of information was given about the cost of delivering groceries. This had interested him, and he had looked into the matter care-

¹ This lesson was prepared with the cooperation of the Commercial Economy Board of the Council of National Defense. It aims to teach the importance of economy in seemingly trivial matters, because the aggregate waste in the Nation is large even when waste seems slight in individual cases.

fully and had been astonished to find out how much unnecessary work there was about his delivery service. If all his customers had ordered their groceries for the whole day early in the morning or the day before, one delivery would have been enough. But many of them had formed the habit of ordering things just before they needed them, and of expecting them to be delivered right away. So even the three regular trips a day were not enough. The wagon often had to make special trips between the regular deliveries and many of the packages it took out were very small and could easily have been carried by the customers.

The letter from the Commercial Economy Board told about an investigation that had been made in the city of Washington. It was found in the course of this investigation that it cost about as much to take things from the stores of that city to the homes as it costs to bring by railroad and boat all the things which come as freight to that city. If a dealer could come to an agreement with his customers about fewer deliveries a day and about carrying their own packages when they could, he could afford in many cases to sell for several cents less on the dollar. The stores in Paris make deliveries only three times a week, while many of our stores make deliveries half a dozen times a day. This means that in Paris they have learned to be more economical of the men and the wagons that are required to make the deliveries.

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1. It is not regarded in some countries as "proper" to carry packages home. Give some other examples of foolish pride.
 2. Find out from the grocer with whom you deal how many deliveries he makes.
 3. If there is a store in your town that does not deliver, find out why and ask the dealer what effect it has on his trade.
 4. The necessity of frequent deliveries is a part of the waste resulting from competition. Give other examples of waste from competition.
 5. What advantages come from competition?
 6. Who pays for these wastes?
 7. How many men are in the Army?
 8. Tell some of the trades that have suffered by the draft.
 9. Find out what the Council of National Defense is.
 10. It always costs relatively more to carry a package a short distance. Why?
 11. Think of as many ways as you can of saving on deliveries.
 12. How could the deliveries of milk be made less expensive?
 13. Packages of goods are now often put up by the manufacturer. How does this help deliveries?

THE NEED OF LABOR.

Probably we should not have thought about the matter so seriously if it had not been for the withdrawal of a good many men from our cities for the Army. Not only is the war taking men away from the delivery wagons which they drive, but it is also using human labor for many other purposes which are urgent and which interfere with ordinary work. We are trying to make guns and munitions. We are called on to build a large number of aeroplanes. Railroads are in need of men, because the freight which is going abroad to support our Armies and to help our Allies is so heavy that it is almost impossible for the railroads to carry it. The result is that we have more work to do in the Nation than we can take care of. When all these urgent demands are made upon our people it is necessary for everybody to think of how he can save. Probably this lesson of saving will carry over into the future. When peace comes again we shall find that we have learned to do without some of the unnecessary services which were common before the war, and among these services will be overfrequent deliveries from the stores.

ECONOMICAL SHOPPING.

The Commercial Economy Board, which was mentioned, is doing everything that it can to encourage people to do their shopping in more economical ways. The board made an investigation of the practices of all sorts of stores by sending out a series of questions asking dealers to tell how much it cost them each year to make deliveries and how much of the work and expense could be saved without any real inconvenience to themselves or their customers.

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1. Are there any war industries in your neighborhood?
 2. Show how the shortage of cars on the railroads is due to shortage of labor.
 3. In England women have taken the places of men in many industries. Do you know of like cases in America?
 4. American labor is affected by the fact that we can not get our usual supply of immigrants from Europe. For what purposes were they employed before the war?
 5. Suppose there are not enough farm laborers. What will be the result?
 6. It has been suggested that the Government enlist workers in an industrial army. What would be the advantage of such an organization?
 7. How does a laborer now know where he is most needed?

On the basis of the answers received to these questions the board estimated that about 200,000 men in the United States were occupied in making deliveries for retail grocery, dry goods, and department stores. It estimated, too, one-half of these men could be taken off delivery wagons and put to doing more useful work if delivery service were cut down to what is actually needed. Instead of going to the store and demanding that something be sent immediately, one ought to plan ahead long enough to allow the regular delivery of the day to carry the package to the house. Whenever convenient, one ought not to ask for the delivery at all, but ought to take care of the thing himself.

The practice of having things sent to the house to be looked over and returned the next day should be done away with, as far as possible. The Commercial Economy Board has also suggested that dealers organize cooperative deliveries. That means that a number of dealers unite and have only one wagon or one set of wagons. It gives a number of examples in its reports of the way in which this has been successfully done in various places. Some dealers say that they can not afford to unite with other stores, because the other stores would then be on a level with themselves in dealing with customers. They try to outdo their competitors, they say, by giving more delivery service than their competitors can afford. But here again the pressure of the war situation is likely to teach us all a lesson of cooperation which will carry over to the period after the war is finished.

THE NEED OF ECONOMY OF WOOL.

The Commercial Economy Board not only deals with savings of the type that has been described, but is looking around for other

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1. Why do people ask for immediate deliveries? How would planning in advance help matters?
 2. What are the advantages of cooperative deliveries?
 3. The advantages of cooperation are illustrated in such matters as road building by communities and the carrying of mail by the Government. Why does cooperation spread slowly?
 4. The calculations given in the text do not speak of the wagons and the horses saved. Estimate how much value these represent.
 5. There are wastes in society which are even worse than the deliveries, such as excessive advertising, multiplication of competing stores and even of competing societies and churches, each trying to attract people. Think of some social economy which you can suggest.

kinds of waste that can be stopped so as to help the Nation, which is now more in need than ever before of people to do work and of the things that make life comfortable and complete.

Very early in the year the attention of the board was called to the fact that a shortage of wool was threatened. This danger came from the fact that so much wool is needed to clothe our soldiers and sailors, and from the additional fact that we are partly cut off from the countries from which we ordinarily import wool. We have secured a great deal of wool from Australia. The ships which used to bring wool are now needed to carry food to the starving people of Europe, and we can not have the wool we need.

CLOTH WASTED IN MERE ORNAMENTATION.

When one thinks about the matter it is not difficult to see that there are many ways in which wool might be saved. A great deal of cloth now used in making clothes is a sheer luxury. We use more cloth in making coats than is necessary. Most clothes consume cloth in mere ornamentation. The suggestion has been made that we change somewhat the style of our clothing and dispense with those parts that are not essential to comfort. The Commercial Economy Board was not certain at first that it could induce people to change the fashion. But the board went to the manufacturers of men's, women's, boy's and girls' clothing, to the pattern makers and the fashion magazines, and to other people whose work influences styles. The need of saving wool was explained to them. As a result the styles of clothes that take up more cloth than is needed for comfort are no longer made.

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1. There is often waste at celebrations. Give an example.
 2. Some recreations are wasteful. Make clear by examples the distinction between wasteful and beneficial recreation.
 3. Look up all the sources of wool used in America.
 4. Much of our woolen cloth was imported from England before the war. Explain why.
 5. In what respects can fashions be called wasteful competition?
 6. Fashions are much more uniform in men's clothes than in women's. Can you explain why?
 7. Why does one hesitate to be out of style in his dress?
 8. The sending out of samples costs a great deal. Who pays the costs?
 9. Could the trade in cloth dispense altogether with samples?
 10. Talk over the matter of samples with some tailor and find out what samples he gets and how he uses them.
 11. Do we need the varieties of cloth that are made for the trade?

HOW ECONOMY WAS BROUGHT ABOUT.

The Commercial Economy Board also looked about for other ways of economizing wool. It found at least one method that has been effective. In order to sell their goods, manufacturers of woolen cloth and clothing have to send to tailors and retailers samples of each kind of cloth. The number of samples which have to be sent out in the course of a year is astonishingly great. The fact is that the samples sent out last year amounted altogether to several million yards of cloth.

The manufacturer who, of course, wanted to make the strongest possible impression on his customers had fallen into the habit of sending as large a sample as he could afford to send. The samples differed in size and seemed to the Commercial Economy Board to be too generous for the real needs of the trade. Since it could not ask any single manufacturer to act alone in this matter, it invited representatives of the various kinds of tailors of the country to conferences and asked them to cut down the size of the samples of cloth, at least for the period of the war. Practically all of them promised to do this, and large savings of cloth have resulted. For instance, one comparatively small group of tailors agreed not to send out any samples larger than 6 by 9 inches. This meant only an inch or so saved on each sample, but altogether it was a saving of 223,108 yards of cloth during the year.

SAVING FOR THE ARMY.

These figures show how a little saving at any one point will produce results that are of great importance to the Nation as a

1. Why did the Commercial Economy Board try to get all tailors to agree to the arrangement?
2. What reasons do you suppose would be considered in deciding how small a sample could be made?
3. What materials other than wool are used in making cloth?
4. What are the differences between the different kinds of cloth?
5. Are all soldiers' uniforms made of wool?
6. Commissions have been organized in foreign countries to save every scrap of cloth. What do we do with our rags in America?
7. People used to patch their clothes more than they do now. Can you see the effects of machine industry in the present practice?
8. "In England a man who has new clothes feels more conspicuous than he would have felt five years ago in a thoroughly shabby suit." Explain.

whole. Woolen clothes for the soldiers are necessary, because the soldiers have to live outdoors in the cold and wet, and wool is the only material that will make suitable winter clothing for them. The Government has found it necessary to cut down the use of wool in the making of cloth for civilians, because the supply is so scant. Our people are being called on in this way to contribute to the support of the Army. The call will become louder as time passes.

STALE BREAD AND WASTE OF WHEAT.

Another example of economy which is simple but produces important results is an economy first introduced by the Commercial Economy Board and later adopted by the Food Administration as a requirement of all licensed bakers. Until a few months ago it was the custom of bakers to supply grocery stores with generous quantities of bread and then, after 24 hours or so, to take back all that had not been sold. They did this so the grocer would be willing to take enough of their kind of bread to meet all calls for it. Some of the returned bread could be sold to poor people who were willing to use it because they could not afford to be like their richer neighbors who insisted on having fresh bread. It would not be a calamity if all the bread that was returned because it was old could be used in this way by people who need it, but the fact is that a large part of the returned bread was not used at all by people. It was fed to animals and otherwise used for purposes that are not at all suitable for wheat, especially at this time when the world's supply of wheat is very low.

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1. The custom of taking back an unsold article is not uncommon in American trade. Do you know of other examples?
 2. Why is the custom wasteful?
 3. Is stale bread unwholesome? Why then is it cheaper and less sought after?
 4. What is a license? Give examples.
 5. Who can issue a license?
 6. How did the Food Administration get authority to issue licenses?
 7. What would happen to a baker who broke the rule about taking back bread?
 8. Does the Food Administration license other kinds of dealers? Give cases.
 9. Think of some of the other possible savings, as, for example, in garbage and ashes which have not been sifted, and estimate how much this may mean to the Nation.

The Commercial Economy Board investigated the matter and found that in a number of cities about 1 loaf in every 20 was returned to the baker. It also found that enough of this bread was used for purposes other than human food to keep 200,000 people supplied with bread. The board began a campaign to correct this waste by addressing a circular to all wholesale bakers in the country asking them to stop the practice of taking back unsold bread.

THE FOOD ADMINISTRATION ACTS.

All this was before the organization of the Food Administration. As soon as the Food Administration had been created by Congress and took up the matter of economy of wheat and other food products it saw the importance of the campaign which the Commercial Economy Board had started. At its suggestion the board carried on the campaign until practically all the bakers of the country had stopped returns. The Food Administration finally licensed all bakers and in granting the licenses laid down the rules under which the bakeries must operate. One of the rules for the bakeries was the following: "The licensee shall not accept returns of bread or other bakery products nor make cash payments, nor allow credit, to any retailer for unsold bread or other bakery products. Nor shall the licensee exchange any bread or bakery products for bread or other bakery products which he has sold." The Food Administration estimates that stopping the return of unsold bread is saving this country 600,000 barrels of flour a year.

The Commercial Economy Board has not confined its work to deliveries and wool and bread. It recognizes that savings in leather, silk, cotton, paint, and other things are equally important and has been studying for some time how they can be brought about.

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Chapter V.

CUSTOMS, LAWS, AND FORMS OF GOVERNMENT.

This chapter is intended to show the difference between custom and law. Both are means by which the members of a community work together to bring about results that they desire. Custom refers to long-continued practices that are binding because everybody, or nearly everybody, is willing; law is binding upon all and is usually made by a special act of some controlling body which has been created for that purpose.

In a democratic community, that is, one like ours in which all men are free and equal, laws grow out of customs, and the legislative bodies which enact them are chosen by the whole people.

In a few countries laws are still made merely because an emperor or a king wishes it so. In former times, nearly all the countries of the world were governed in that way, and the people were obliged to do as their rulers commanded. The kings claimed that their authority came from God, and the people were generally willing to let them have their way. The "autocrats," as they are called, did not need to base their edicts upon custom, but even they found it convenient to follow the customs of their peoples in ordinary matters.

The spirit of freedom arose early in England, and King John, who was particularly tyrannical, was compelled, in 1215, to sign a paper, which was afterwards called the *Magna Charta*, giving his subjects many privileges which they did not have before. From time to time additional rights were secured to the people, and now the English make their own laws just as we do. Their king has far less power than our president.

When the American colonies secured their independence and set up a republican government, the people of other countries were stimulated to demand more and more the right to make their own laws. The French overthrew their king in 1789, and that still further increased the demands of the people of the world for more complete liberty. So widespread has this spirit become that the only important countries remaining in the world in which the people do not actually govern themselves are the countries with which we are now at war.

LESSON C-17. CUSTOM AS A BASIS FOR LAW.

Prepared on the basis of material supplied in part by Edith Ayers, fellow in philosophy, University of Chicago.

We all know that there are certain laws passed by the city and the State which we must obey. When we think of the matter we know also that there are certain ways of doing things, called customs, which are not laid down as laws by the State government or the city government, but must be accepted by anyone who wants to get on with the people around him. The law does not require a man to lift his hat to a lady of his acquaintance, but social custom in America does.

Customs are more ancient than laws. Before there were laws or States and cities there were customs. In many cases modern

laws grow directly out of ancient customs. For example, it is an ancient custom of our people that a man is the master of his own house. Many of our modern social customs recognize this ancient right. The law of the State also recognizes it. Not even a police officer may enter a man's house without a warrant from a magistrate. In this and many other cases law grows out of custom. Sometimes, to be sure, new conditions call for new laws. Our cities have brought to light many new problems, but even these new problems are usually solved in accordance with the spirit of well-established customs.

We shall understand law better if we study customs and see how they govern people's actions. The law of the State will then be seen to be only one of the many kinds of rules of behavior laid down by the community in which we live. Perhaps we have not thought how strong customs are even in our modern world.

METHODS OF GREETING.

For example, let us consider our method of greeting those to whom we are introduced. It seems natural enough to us to shake hands. Imagine our surprise if someone in America should suddenly adopt the practice of the Shooan gentleman when he meets a person for the first time and should seize both our hands and raise our arms to their full length three times in rapid succession. In Africa some of the native tribes show their devotion for people whom they meet by kneeling on the ground, bowing the head, and sprinkling dust on the face and forehead.

EXPRESSIONS OF EMOTION.

Think of the customs which are described in the Bible and in the Roman histories. The people who lived at the beginning of

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1. What law can you mention which relates to some common matter, such as the speed of driving an automobile or throwing things on the street?
 2. Who makes such laws?
 3. Who enforces such laws?
 4. Are there any acts which you know you ought not to perform but which the law does not forbid?
 5. Are there any city laws against cheating in games?
 6. Could you call in a policeman to stop him if somebody cheated in a game?
 7. What makes us play fair?

the Christian era showed their sorrow or anger by rending their garments. To be sure in later periods this tearing was a refined and well-arranged matter. It was confined strictly to a part of the garment set aside for that particular purpose; but it was the regular method of showing emotion. Imagine a modern American gentleman exhibiting distress or anger in a like fashion.

CUSTOM CONTROLS EVERY PART OF OUR LIFE.

The punishment for a person who breaks custom comes when he discovers that public opinion is "down on him." Everybody thinks him queer; nobody wants to be seen with him, and the result is that he is left without friends and without any way of making a living. He is an outcast from society though he may never have broken a single law. This is what might happen to a man, for instance, if he should walk down the main street of a town in the costume of an African savage. On the other hand, if he were in Africa, American clothes might make him conspicuous and the natives might think him so queer that they would want to kill him. Custom decides when, where, and what we shall eat, how we shall dress, and what sorts of things we shall do for a living.

CUSTOMS DEAL WITH MATTERS NOT INCLUDED IN THE LAW.

It is very important that this should be so. There are many matters which are outside the law and which could not be regulated except by customs. For example, we commonly have in each family a fixed hour for meals. There is no legal requirement

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1. What is the penalty against unfair playing?
 2. How is this penalty inflicted?
 3. Mention a number of ordinary customs other than those referred to in the text.
 4. What do we mean by good manners? Bad manners?
 5. What are the rewards for having good manners?
 6. What makes a foreigner seem strange to us?
 7. What are good manners to a foreigner when he is in our country?
 8. What are good manners these days in regard to sorrow and anger?
 9. Where do our fashions in dress come from?
 10. Can you think of some changes in fashion that would be wise? Give your reasons.
 11. How could we go about changing the fashions?
 12. Why is such a change difficult?

that the midday meal shall begin at exactly 15 minutes after 12. There is a family rule on this matter in many homes and it is important to the cook that there be regularity, but the city would hardly be justified in making that particular hour official.

On the other hand, the State decides the time for celebrating holidays because business would be upset if people took holidays whenever they felt tired of working.

CUSTOMS EXPRESS THE SPIRIT OF THE COMMUNITY.

Customs show the spirit of the social group to which they belong. The groveling salutation of the African native, who bows in the dust, would be quite impossible in a democratic society where men believe that they are equals. In the Middle Ages, people were divided into different classes, according to social rank, and nobody of one class could ever hope to become a member of another. The peasant or farming classes did most of the work. Of course in those days there were no factories, and farming was almost the only thing that people could do to make a living. Gentlemen, or members of the upper classes, were supposed to do nothing but fight. The honor of a gentleman meant his reputation as belonging to the military class; so the best way for a man to defend his honor was by fighting as often as possible. In consequence, the gentlemen of the Middle Ages were always picking quarrels with one another about very trivial things. It was out of this situation that the custom of dueling grew up. A man would challenge someone to a duel if he happened not to like the way the other man was looking at him. If one of the men was killed, that proved the courage and the honor of the other.

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1. Mention several family customs which are not followed by all families in the community.
 2. Where did holidays originate? What does the word mean?
 3. Mention some holiday which is observed in certain parts of the country but not in others.
 4. How does the law recognize holidays?
 5. What is meant by the democratic society mentioned in the text?
 6. What other kinds of society are there, and why should other kinds of salutation be more appropriate to them?
 7. Why do men tip their hats to women and not to other men?
 8. What was the meaning of the word "gentleman" in the medieval period?
 9. Is dueling practiced anywhere in the world these days?

USEFULNESS IS DEMANDED BY OUR CUSTOMS.

It is impossible to imagine a situation of this sort in our society. Nowadays, except in some European countries where this military class still survives, a man can not afford to fight a duel over nothing at all, because everyone has an occupation of some sort which he can not leave in that reckless fashion. In the Middle Ages gentlemen were proud of the fact that they did not have to work, and so they tried to appear as useless as possible in everything they did. Now a man is ashamed to be thought useless. In our society everyone prides himself on being able to do something well. So a custom like that of fighting duels could never grow up because it would not express the spirit of the community.

AMERICAN CUSTOMS ARE DEMOCRATIC.

One thing that the gentleman of the Middle Ages was accustomed to do seems even more strange to us. He used to be very careful to pay his gambling debts which he contracted with members of his own class, but it was not expected that he would pay much attention to the money which he might owe to his landlady, or his washerwoman, or his tailor, for these were of a lower class. To-day, of course, our whole society depends upon our belief that no one should be allowed such an advantage over another. We can not tolerate the idea that one class may have advantages over another. Our whole business system would break down if we did not have the same regulations for all parts of it. Although no country in which there is modern business could afford to allow this sort of carelessness about money, the officers in very military countries still show a great contempt

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1. What are some of the customs of recitation and order in the school?
 2. Why do these customs exist?
 3. What would you suggest as the best way of dealing with some one who broke the classroom custom constantly?
 4. What is the need of uniforms among soldiers?
 5. Formerly uniforms were of all kinds of bright colors. Why are they not so now?
 6. There used to be liveries and costumes for all kinds of house servants. These have grown fewer and are commonly worn indoors only. Why?
 7. Why should the conductor on a train wear a uniform?
 8. In what sense are our salutations democratic?
 9. Why do we stand up when the Star Spangled Banner is played?

for the common laboring classes by a difference in dress. In our country differences in dress are not tolerated as class distinctions. Uniforms appear on our streets, but they are intended for the most part to show some sort of official rather than purely personal distinction. Our salutations also are democratic, as shown by the fact that they are very simple and direct. No individual has to prostrate himself before another. The rights of the public highway are also controlled in such a way as to show that everyone is of the same rank.

CUSTOM COMES BEFORE LAW.

Long before any rules of life were laid down by governments or by such social organizations as the church or school, men were controlled in their actions by customs. They did not dare to break away from the regular ways of doing everything. They ate their meals in a certain way. They were in the habit of dealing with their friends in one way and with their enemies in another. All these customs were even more binding than our modern laws. In fact, we shall find, if we study the history of laws, that modern laws are nothing more nor less than customs that have been made binding on everyone.

LAWS GROW OUT OF CUSTOMS.

For example, men pass each other on the road and on the sidewalk in a regular, well-ordered fashion. In England the custom is to pass to the left; with us the habit is to pass to the right. In both cases the habit is far more ancient than the law. The

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1. "Law can not be made until there is a strong government; custom is necessary wherever men live together." Show that this statement is true.
 2. The most rigid law is that of the Army. Why?
 3. What is a court and why is it necessary in a civilized society?
 4. What is meant when we say that a law has become a "dead letter"?
 5. Can you find in history any cases of laws which have become dead letters?
 6. Are there any present-day laws which you know are not enforced?
 7. Do you know any family rules or social rules which are not commonly enforced?
 8. What is the effect of not enforcing a law?
 9. Does the law suffer when an offender is forgiven?
 10. Under what conditions do you think a law should not be enforced?

habit arose from necessity and would control people even if there were no laws or city ordinances telling people how to pass. Now, however, on crowded city streets, on waterways where vessels have to pass each other, or wherever it is especially important that people behave exactly right, laws and ordinances are enforced in keeping with the ancient law of the road. The law of the highway has always followed the custom of the highway. Even where there is no written law, courts award damages on the ground that everyone knows the right of each user to his own side and only to his own side of the way. Such an example shows how custom passes into law as well as precedes law.

This example calls attention to the fact that our law courts can often decide cases by referring to custom. Custom which is accepted in law courts is called the common law, in contrast to statute law, and is enforced quite as strictly. Thus through the courts society is able to turn custom into law.

It would not be a complete statement of the case to say that all law comes directly from custom. In some countries the authority of a king or of a general is strong enough to impose laws on the community. Even in such cases it is usually true that the king does not attempt to require something which is different from the customs of the country. Even the king himself is not superior to the rule of custom.

SOCIAL CONTROL.

We speak of customs as forms of social control. We mean that people who live together control each other through custom.

1. In this country when some reform is to be made into a law a campaign of education is often carried on at great length. Explain this method in such a way as to show that it agrees with the text.

2. What are some of the chief responsibilities that belong to the citizens in a democracy?

3. President Wilson has repeatedly said that this war is being carried on for the purpose of bringing democracy to the world. Where is there any other kind of government now?

4. In undemocratic countries how are the laws made?

5. How can an undemocratic country be made into a democratic country?

6. Taking the example of Russia, can you see some of the difficulties of making this change?

7. Is a democracy made by giving everybody the vote?

Laws are also forms of social control, but they come later than customs and are called "governmental controls" or "formal and consciously adopted controls." If laws are passed which are contrary to the spirit of the community, they are likely to be of little effect. It may even be impossible to make anyone obey such laws. If, on the other hand, a law does express the spirit of the people as already embodied in their customs, everyone will approve of it, and it will be easy to enforce it.

INTELLIGENCE REQUIRED IN A DEMOCRATIC COMMUNITY.

In a democratic country like our own everybody is partly responsible for the laws through his right to help elect the law-makers. It is important that people understand what good laws are. People should understand that laws are passed for the purpose of improving community life. Sometimes people think of the law as if it were unfriendly to the common man. They even go so far as to resist the law because they think it is a hindrance to their ordinary lives. Such people ought to discover by the study of history that laws are in reality outgrowths of the common practices of the community. They are statements of those ways of living which long experience has shown to be wholesome for all citizens. Good laws are as natural as good health, and the practices of the community when all is going well can be compared to good health. The lawmaker is like the physician, anxious to set up rules which shall continue the good health of the community and shall describe those forms of life which are most likely to prove advantageous to all people. The punishments which are a part of certain laws are intended to keep people from acts which are harmful and dangerous. Such a view of the meaning and value of laws ought to lead to a greater respect for law and government and a readier acceptance of both.

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LESSON C-18. COOPERATION THROUGH LAW.¹

The more closely people are associated in community life the greater the likelihood of conflict of interests, although there may be many interests in common. Sometimes these conflicts are due to selfish disregard of the interests and rights of others. More often they are due simply to the fact that where there are so many people doing so many different things, some unintentionally get in the way of others. Very often it is difficult for one person to see what the actual results of an apparently harmless act may be. A family that is careless about the disposal of refuse from house and stable may be wholly unconscious of the fact that it is poisoning the well of a neighbor half a mile away. Very often men will oppose public improvements, such as better roads or a new schoolhouse, because they see only the direct money cost to themselves, and fail to see the indirect advantages to themselves and others.

LAWMAKING IN A BOYS' COMMUNITY.

There was once a boy's school located in an 800-acre tract of land which included fields and woods and stream. Aside from their studies and some necessary work on the school farm, the boys spent their time in roaming the fields and woods, gathering nuts and other products of the woods, trapping rabbits and muskrats, and otherwise living a life very much like that of the primitive hunter and trapper. One of the customs of the schools is thus described:

Just after midnight some morning early in October, when the first frosts of the season loosened the grasp of the nuts upon the limbs, parties of two or three boys might be seen rushing at full speed over the wet fields. When the swiftest party reached a walnut tree, one of the number climbed up rapidly, shook off half a bushel of nuts and scrambled down again. Then off the boys went to the next tree, where the process was repeated unless the tree was occupied by other boys doing likewise. Nut hunters coming to the tree after the first party had been there, and wishing to shake the tree some more, were required by custom to pile up all the nuts that lay under the tree. Until this was done, the unwritten law did not permit their shaking any more nuts on the ground. Anyone who violated this provision and shook the nuts from a tree before piling up those beneath would be universally regarded as dishonest, and every boy's hand would be against him.

¹ This lesson was prepared by Arthur W. Dunn, United States Bureau of Education. It aims to show that law is developed in the effort to promote social cooperation. Like the organized forms of industry, civil government is a means of promoting the productiveness of society and the comfort and happiness of its members.

But after a while some greedy members of this boy community thought of a plan to get ahead of the other members. Some time before frost came they went into the woods and took possession of most of the nut trees by the customary method of shaking them. They obeyed the letter of the law, but they took advantage of their fellows by not waiting until the nuts were ripe. What happened? Some of the members of the offended community called a meeting of all the boys. They discussed the matter thoroughly and provided against a repetition of the trick by making a rule that thereafter the harvesting of the nuts should not begin before a fixed date in October.

REGULATION OF FOOD SUPPLY.

A few months ago Congress did for the entire United States very much the same thing that these boys did for themselves in their school community. It passed a law for the regulation of the country's food supply. Before the war broke out, there was an abundance of food for every one, just as there were plenty of nuts for all the boys in the school. The conditions created by the war made it clear that we were much more dependent upon other people for food than we had realized. When the war deprived France and Italy and England of their usual sources of sugar, these countries turned to the West Indies for it. This seriously cut into our own supply of this article. War also disturbed transportation. Moreover, many people attempted to hoard sugar and other food materials, much as the greedy boys took possession of all the nuts.

Now, as individuals it was impossible for us even to understand all the factors in the food situation, to say nothing of con-

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1. There are laws which forbid certain acts. Give example of laws that forbid one to trespass on a neighbor's property.
 2. There are laws which command members of the community to do something for the community good. Give an example of a tax law and show how it helps the community to improve.
 3. Show how your community cooperates for your education.
 4. How much school tax does your father pay each year? Could you employ a teacher at home for the same amount?
 5. If you had a teacher at home, could you get as good an education as you now can in school? Give reasons for your answer.
 6. Who determines how much the school tax shall be? How is the amount determined?
 7. What penalty is imposed on a person who does not pay taxes?

trolling them. Therefore Congress created for us, by law, the United States Food Administration to act as our agent in studying the situation and to tell us how best to work together to meet it. For one thing, the Food Administration tells us that if each one of us will save each week a few ounces of wheat, of meat, of butter, of sugar, we shall go a long way toward supplying the needs of our armies and of our allies, and still get along very well ourselves.

LAW MAKING BY TOWN MEETING.

The way the boys met their situation at nutting time illustrates the simplest method of cooperation in law making. They acted as men have often acted under simple conditions of life. In early England the smallest district organized for purposes of government was the town or township. It consisted of a village with surrounding land used for farming and pasturage by the inhabitants of the village. It was like the school just described, with its meadows, tilled land, and woodland. Every spring the men of the town assembled in town meeting to agree upon rules to govern the use of the land, just as the boys made rules to govern the harvesting of nuts. When the descendants of these early Englishmen settled in Massachusetts, they brought with them this idea of the town and the town meeting; and to this day the town meeting is the chief feature of local government throughout New England.

WHAT THE TOWN MEETING DOES.

The New England town meeting transacts three kinds of business. First, it elects town officers to carry out the wishes

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1. What are some of the rules that regulate your conduct in school? who has made these rules?
 2. Give reasons why the interests of the school do, or do not, justify the restrictions placed on your freedom by these school rules.
 3. Do you have any part in making rules for your school? What are some of the things in regard to which you might properly help to make rules?
 4. What penalties are imposed on those who break the school law?
 5. Is it the duty of an ordinary citizen to enforce the city law?
 6. How about the enforcement of the school law; whose duty is it? In this connection consider whom the school law benefits.
 7. Who is to be benefited by the food regulations made by Congress and the Food Administration?
 8. Whose duty is it to enforce the food regulations?

of the town meeting throughout the year and to enforce State laws as they apply to the town. Second, the town meeting has to provide the money to carry on the business of the town. It does this by levying taxes and from these taxes setting aside sums of money for particular purposes. The taxing power is an extremely important one, and the people have always sought to control it carefully. You will recall that the American Revolution was brought on because the colonists had no voice in their own taxation. The third business of the town meeting is that of making laws to control the work of the elected officers, and to control the conduct of the citizens so far as it affects the welfare of the town as a whole. The town meeting can make laws relating only to matters that concern the town alone. Even in these local matters it is restricted by State laws for reasons that we shall see later. The powers of the town meeting extend to such matters as roads, the care of the poor, public health, schools, etc. The following items of business of two town meetings illustrate the nature of their business:

To vote "Yes" or "No" on the question, Shall licenses be granted for the sale of intoxicating liquors in this town?

To see if the town will raise and appropriate a sum of money for the observance of Memorial Day.

To see if the town will appropriate a sum of money for the maintenance of a free bed or beds in the Waltham Hospital for the ensuing year.

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1. Describe the school board, or school committee, of your community: Number of members? How chosen? Duties?
 2. Does your school board make laws? If so, give illustrations.
 3. From whom does your school board get authority to legislate?
 4. Is there a State board of education in your State? Does it make laws? If so, how do they differ from laws made by your local school board?
 5. You are required by law to attend school until a certain age. Is this law made by a local or a State legislative body? Give reasons why this should be so. What legislative body made the law?
 6. The school board represents the citizens in performing a number of acts which used to be performed by the town meeting. Name all the representative bodies you can which have a part in our government.
 7. Of how many members does your city council consist? Are they elected by districts, or by the whole city? Who have the right to vote for councilmen? For how long a term are your councilmen elected? How often does the council meet?
 8. Does your city council consist of one chamber or two? What reasons are there for a two-chambered council?

To see if the town will appropriate a sum of money to build Sycamore Street as ordered by the county commissioners, determine how the same shall be raised, or act thereon.

To see if the town will take any action relative to the adoption of a system of sewers and sewer assessments.

To see if the town will raise or otherwise provide and appropriate the sum of \$925 to be expended under the direction of the tree warden for the purpose of exterminating the brown-tail moth, the gypsy moth, and other injurious pests, or what they will do in relation thereto.

LAW MAKING BY REPRESENTATIVES.

When the population of a community is large, as in a city, law making by town meeting becomes difficult. Only a part of the citizens can attend, and there is less general interest in the meeting. The officers to be elected and the business to be taken care of are likely to be decided upon in advance by a few men. Besides, public questions become so complicated in a large community that few citizens have time or means to form an intelligent opinion regarding them. How to get an abundant supply of pure water for household purposes, for fire protection, and for industrial uses is a question of the greatest importance and often of great difficulty. It often requires the most exact scientific knowledge and the expenditure of millions of dollars. Arrangements to carry off sewage and other refuse; facilities for transportation; the

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1. Has your city a charter? What is a charter? What is the difference between a charter and a constitution?
 2. Where did your city get its charter? Did the voters of your city have anything to do with framing or adopting your charter? What arguments can you give in favor of their having such voice?
 3. Name as many laws as possible that the policemen of your city enforce. Were all of these laws made by the city council? If not, by whom were they made?
 4. Why should city policemen have anything to do with enforcing State laws?
 5. What are some laws regulating your conduct on the street? Show how you might suffer if these laws were not enforced.
 6. What laws can you name that regulate the life of your family in the home? Which of these, if any, are State laws?
 7. Do you live in a township? If so, is it governed by a town meeting? If there is no town meeting, who makes the laws for the township?
 8. Does the county in which you live have a legislative body? If so, what is it called? In regard to what matters does it legislate? If it is a representative body, how are the representatives chosen?

building of durable streets; the comfortable and healthful housing of the people; the protection of the public health; provision for public education and recreation—these are some of the questions that city communities have to deal with. It becomes necessary in a city to deal with them through representatives elected or appointed for the purpose.

COOPERATION FOR A CLEAN CITY.

Benjamin Franklin has told us the following incident from his own experience:

One day I found a poor industrious man who was willing to undertake keeping the pavement clean by sweeping it twice a week, carrying off the dirt from before all the neighbors' doors, for the sum of sixpence per month to be paid by each house. I then wrote and printed a paper setting forth the advantages to the neighborhood that might be obtained by this small expense. * * * I sent one of these papers to each house, and in a day or two went around to see who would subscribe an agreement to pay these sixpences; it was unanimously signed and for a time well executed. This raised a general desire to have all the streets paved and made the people more willing to submit to a tax for the purpose.

A hundred years later the people of Franklin's community were paying a contractor more than \$1,500,000 a year to clean the streets and to remove ashes and garbage. Besides, they had more than 1,200 miles of sewers, for which they had paid nearly \$35,000,000. All of this is under the direction of various departments of the city government, through which the people are working together for a clean and healthful city just as the neighbors did in Franklin's time when they employed the street sweeper.

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1. How is the law made for ordinary social organizations such as a club?
 2. Does the State have anything to do with the laws of a social club?
 3. Does the school have anything to do with the laws of a social club?
 4. What is parliamentary law? Is a society bound by this law?
 5. Why do we allow a majority to rule in most cases in making laws?
 6. Under what conditions do we require more than a majority to make laws?
 7. What is a court? Is there such a power as a court in the school? In a social society?
 8. Why does a society need a chairman? What does he do?

THE CITY COUNCIL.

The chief lawmaking agent of a city is a council elected by the people. It also has power to levy taxes and appropriate funds for the community activities agreed upon. The people do not meet in town meeting even to elect their representatives in the council, but each person goes to a certain voting place on election day to cast his vote. Occasionally the people vote at the same time on such questions of public importance as whether the selling of liquor shall be allowed. Some lawmaking powers of limited extent are also delegated to special governing agents, such as the board of education and the board of health. But in general the lawmaking of the community is given over to the council.

THE SOURCE OF LOCAL LAWMAKING POWER.

The lawmaking powers of towns and cities are limited and are bestowed upon them by the State. This is because towns and cities are parts of the larger State community. There are many matters of importance to all the people of the State which it would not do to leave to each local community to regulate for itself.

WHAT OBEDIENCE TO LAW MEANS.

Great care should be exercised in the selection of representatives to the lawmaking bodies because the kind of government which the community has depends on the faithfulness and intelligence with which the representatives carry out the will of the people

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1. What are the requirements which a man must meet if he becomes a member of a city council? A member of the State legislature? A member of Congress?
 2. Who has a right to vote for each of these representatives?
 3. Mention three kinds of cooperation not required by law. Three required by law.
 4. What are some of the motives which lead to cooperation when not required by law?
 5. What are the penalties which come to a person who does not cooperate except where the law requires it?
 6. What laws of cooperation does a factory have which the State did not enact?
 7. Are there any rules of factory work in which the State takes part?
 8. Are there any laws in your community that have been passed by direct vote of the people?

who elect them. An officer in one of the military training camps is said to have addressed a squad of recruits as follows:

Boys, I want you to get the right idea of the salute. I don't want you to think that you are being compelled to salute me as an individual. No! When you salute me, you are simply rendering respect to the power I represent; and the power I represent is you. Now let me explain. You elect the President of the United States, and the President of the United States grants me a commission to represent his authority in this Army. His only authority is the authority that you vest in him when you elect him President. Now, when you salute an officer, you salute not the man but the representative of your own authority. The salute is going to be rigidly enforced in this Army, and I want you boys to get the right idea of it. I want you to know what you salute and why.

So it is with our laws. These laws must be rigidly enforced. But if they are made in the interest of the community as a whole, and express the will of the community as a whole, as it is intended that they shall, obedience to them is obedience to ourselves, whether they be made by town meeting, by city council, by State legislature, or by Congress.

Obedience to law is part of the cooperation which has been discussed and illustrated throughout these lessons. The industrial cooperation which one sees in a great modern factory has been possible only because people have learned to work together according to a carefully planned system. In the same way the city and the State have grown out of the willingness of people to adopt rules of life which make it possible for everybody to be comfortable and orderly and to demand of everyone else that he keep the common peace through obedience to the common law.

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LESSON C-19. HOW THE CITY CARES FOR HEALTH¹

The saying that "God made the country, but man made the town" is only a century and a half old; but the feeling is older than that. Old cities were usually dirty, ill-smelling, and unwholesome. People in them lived a huddled and unlovely life. The coming of machinery and the modern factory, which brought people crowding in to the new cities of the past 75 years made matters very much worse. Little children in the early factory towns had small chance to live, and less to make life pleasant. Sickness was on every hand. Epidemics and plagues swept repeatedly over the neglected cities, and early death was a frequent visitor in every family.

CITIES CAN BE IMPROVED.

People seemed to take all this for granted. "God made the country," they said, "but man made the town." Slowly the idea grew, however, that if man did make the town, after all God made man, and man might remake the town; and we have set ourselves to that business. We have learned slowly and painfully that when men come to live close together, we can not close our eyes and fold our hands and let things drift. If we do, the city becomes not a blessing but a menace to human happiness. The ugliness of life in our cities of a century ago taught men that they must make use of their public authorities to clean up the city and make conditions humane and wholesome. No city has yet done more than a fraction of what can be done in this direction, but all have gone far enough to know that a modern city may be the home of happy and healthy people if we want to make it so.

Because there is not any sort of work a city does that brings surer or prompter reward than that for the public health, and because there is nothing so important as health as a basis for every other good thing in life, we shall in this lesson try to see what our cities are doing to help their people to keep well.

WHAT THE CITY CAN NOT DO.

In the first place, perhaps it ought to be said that there are many things a city can not do for us. It can not very well pre-

¹ This lesson was prepared by Frederick D. Bramhall, instructor in political science, University of Chicago. By using the example of modern, progressive legislation with regard to health, this lesson illustrates the way in which law is continually being enlarged for the purpose of improving the life of the community.

vent us from eating things which disagree with us, nor from eating too much. It can not insist on our taking reasonable exercise or sleeping enough or wearing sufficient clothing. Things of that sort it has to assume that we have sense enough to do. All that it can do in such matters is to urge us to see that we ought to do thus and so, and to try to see to it that no one is fed unwholesome food against his will, nor deprived by his neighbor of the chance to live wholesomely. After the city has done all that it can, people may still suffer from their own folly.

Nor can the city do away, of course, with all accident and disease. We are steadily learning about the prevention of more and more of the old plagues of mankind; but some still baffle us. The epidemics of infantile paralysis of two years ago, for instance, left us with many unsolved problems. Our physicians and scientists could not find the cause of this disease and so could not tell us how to ward it off. But in the case of most other diseases the public health officers have been more successful.

DISPOSING OF REFUSE.

What, then, do the public servants of the city do for the protection of our health? One of the first things connected with

1. Earlier lessons have shown why people came together in the cities after the development of machine industry. Review these facts.
2. Why are the natural conditions of life in the country more wholesome than those which result from the coming together of many people in a city?
3. Recent investigations have shown that the health of people in a well-regulated city is better than the health of people in the country, especially because of the better food which is supplied in the city. Can you indicate some of the reasons why the food supply in a city is superior?
4. What has been done to prevent the spread of epidemics and plagues in a modern city?
5. What has been done in your own town to keep the streets and roads clean?
6. What still remains to be done in order to improve the conditions in your town?
7. In answering the last question attention should be turned especially to the difference between occupied and unoccupied lots. Why is the unoccupied lot frequently a serious menace to the health of the community?
8. What effort does a city make to train its inhabitants in matters of personal health?
9. Mention some problems of personal hygiene as distinguished from problems of public hygiene.

health we learned to use our city governments for was to get rid of wastes and refuse. Even before we learned anything about the ways in which disease is spread by germs which breed in dirt, we guessed that ill-smelling things had something to do with ill health. Really we went farther than the truth, so public health experts tell us, and had more fear of sewer gas and of garbage pails (except as nurseries for flies) than we need have. At any rate, we went in the right direction and made our public servants build and operate thoroughgoing systems of sewerage and more or less thorough systems of garbage collection and disposal. There are still some cities that let private companies do these things for a profit. This is usually a bad method of dealing with the matter. It may save money, but it is really wasteful, because it endangers life. It would be much better to spend money and have the work done in such a way as to promote health, even if that way is more expensive.

PURE WATER.

Almost as clear as the need of getting wastes out of the way is the need for plenty of clean water. For that, too, we generally use our public servants. People can not have their own wells in the city. Wells are generally forbidden by law because they are so sure to be unwholesome and to scatter diseases like typhoid. Instead we build great works for the whole community. Some

1. The hygiene of war times has been described as different from that of ordinary times. Show that this is true with regard to the food supply and also with regard to the supply of clothing.
2. What special care of their health should people compel themselves to take in view of the difficulties of living properly during war times?
3. How does your family dispose of garbage?
4. In recent times attention has frequently been called to the necessity of destroying flies. What relation has this campaign against flies to the matter of the removal of garbage?
5. For what purposes can garbage be used so as to prevent complete waste?
6. Show somewhat more fully than is shown in the lesson why it is wise to spend money on the proper removal of garbage.
7. Review the early lesson on the water system and show how the water becomes impure with the growth of the community.
8. A city water system is safer than private wells would be for all who live in the community. Show why this is so.
9. Get a description of some of the great water systems of the country other than those described in the earlier lesson.

of them are wonderful pieces of engineering, bringing water great distances, as New York does from the Catskill Mountains and Los Angeles from the lower Sierras.

PURE FOOD.

After waste disposal and clean water, we turned our city governments toward securing clean food. The foods most generally used were the ones we first paid attention to, that is, milk and bread. The further city dwellers got away from the cow, and the larger the number of people who handled the milk, the more impossible was it for anyone to know whether the milk he bought was going to be food or poison to him. It was to stamp out typhoid fever mainly that we had taken such great pains with our sewerage disposal and our water supply. It was to finish wiping out typhoid fever and to attack diphtheria that we turned particular attention to milk. It is no simple task. If it is done thoroughly, inspectors must go out to see that proper care is taken on the dairy farms; transportation must be watched; bottling stations supervised; milk depots inspected; the milk itself frequently tested.

Bakeries are now regulated in most cities to keep the bread clean. Basement bakeries are generally forbidden. To some extent our city officers protect for us such foods as fish, ice cream and confectionery sometimes, and especially meat, although most of our meat comes now from large packing houses which the

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1. What is the system of milk delivery in your town?
 2. From what source does the milk come to your house each day?
 3. What precautions do the public-health officers take with regard to milk in your town?
 4. What are some of the ways in which the family can add to the precautions taken by the public in regard to food?
 5. In some schools food is supplied for luncheon by the school authorities. This is both a means of promoting health among the school children and a means of education. Can you give any reasons why schools should be interested in such matters?
 6. Does your school have a system of health inspection?
 7. Are there school nurses? If so, describe some of their duties. If not, get a description of some school system which has medical inspection and school nurses.
 8. Some schools have special open-air rooms for children who are not strong and well. What is the advantage of an open-air room?
 9. Most schools have introduced physical exercises. What is the advantage of physical exercises as a part of an education?

Federal officers control. Restaurants are generally supervised. The most progressive cities nowadays inspect the health of all persons who are employed in handling foods of all sorts for the public.

All these activities for the protection of food vary greatly from city to city. Some do all these things, and others do few of them. Sometimes they are done well; sometimes there is the merest pretense of doing them. It is always interesting to find out what one's own city is doing and to compare it with others.

CARE OF INFANTS.

We have barely begun the round of an active city's care for health. Let us look next at what it is doing for little children. One of the great tragedies of our day has been the needless deaths of so many little babies. A few years from now people will be shocked to remember how many we allowed to die who might have lived with just a little care from our common governments; how many we let sickness stunt and mar who might have been sturdy and vigorous. The first task our active cities set themselves to is to know where all new-born babies are and to insist on prompt report so that we can see quickly that they have what public protection they may need. Then comes the work of the visiting nurses, who call and give help and advice where needed. Infant welfare stations are established where mothers may go for help and guidance about the care of their babies. Certified milk stations are established where safe milk can be bought at reasonable prices and clinics are held where expert physicians offer their

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1. What is meant by an epidemic?
 2. What precautions does the school take when an epidemic breaks out?
 3. Why is vaccination required of the pupils in many schools?
 4. What has been the experience of the United States Army with regard to the advantages of vaccination of soldiers?
 5. Some people object very seriously to vaccination. Their objections should be compared with the facts obtained in answering the last question.
 6. What are the causes of tuberculosis?
 7. One of the greatest advances in the manners and hygiene of modern times is the preventing of spitting. Explain why cities adopt laws against spitting.
 8. Public sanitariums have been built for the treatment of various diseases, especially tuberculosis. Can you show that this is a profitable investment for the community?

services. Especially in the summer, such stations have saved thousands of lives in our larger cities. Of course, so long as extreme poverty exists, little children will die who might live. The Children's Bureau at Washington has found that the deaths of little children increase regularly as the income of the family gets smaller. In the meantime, surely every city ought to see that the misfortunes of its poor working men and women do not include the sorrows of babies' deaths that might be avoided.

MEDICAL EXAMINATIONS IN SCHOOLS.

As children grow older a modern city does not forget them. Through medical examinations in the schools, it discovers troubles in eyesight, in hearing, in teeth—troubles that can usually be rather easily helped—and gives advice and assistance to parents in curing them. It tries also to help children to live right by teaching them hygiene. In some States health officers examine children who apply for working certificates, to see whether they are in fit condition, and to guide them to wholesome work.

PREVENTION OF CONTAGION.

For the general health of the city we have still other activities. Among the oldest duties of health departments are to watch for, report, and shut off contagious diseases. These things still take up a great deal of the time of health officers. Once our only interest in cases of measles, scarlet fever, diphtheria, and small-pox was either to shut them up in their houses or to send them off to what we brutally called "pest houses." Now we not only try to keep them from spreading, but we study the location of them on the map of the city. If we can, we find where they came

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1. Why should the temptation arise in cities to build insanitary tenements?
 2. Why is a dark room insanitary?
 3. Why is poverty likely to be connected with insanitary conditions in the home?
 4. No building can be erected in a well-governed city without a permit granted after inspection of the plans. Why, then, should there ever be an insanitary tenement?
 5. What precautions are taken to keep the air pure and wholesome in public places?
 6. Why are precautions necessary in public buildings that are not taken in private homes?
 7. Why is smoke mentioned in the text as the source of an insanitary condition of the air?

from, remove the causes, and help in the treatment either at home or in contagious-disease hospitals.

THE WAR AGAINST TUBERCULOSIS.

Over one contagious disease especially a great victory is being won. That disease is tuberculosis. In our fathers' day, to tell a man he had consumption was to tell him to give up hope of life. Now we know that it can almost always be cured, principally by fresh air and good food, and that by both private and public care one of the greatest afflictions of mankind can be banished from the world. So every good health department is waging constant war against tuberculosis by means of education, leaflets, street-car signs, lectures, through visiting nurses, and through fresh-air camps and sanatoria.

POSITIVE HEALTH MEASURES.

If a community is to be healthy something more must be done than merely to help cure diseases. We could go on forever dealing with disease when we found it, and if we left untouched the kind of homes out of which health can not come, we should not make very much progress. It is only within the past 25 years that any cities have paid much attention to the houses people live in. Now many cities have some sort of public control of tenements, but so little has been done that the great threats to public health that come from overcrowded and unwholesome dwellings are still growing rather than shrinking. Here, again, we meet the great difficulty that some families do not earn enough to pay for decent living. Until we solve that difficulty in some way we can not make things good, but only somewhat better.

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1. What provisions for play are there in connection with your school?
 2. Is it necessary to have anything more than an open space to encourage play?
 3. Among the amusements provided in your town can you describe some which do not help the health of the community?
 4. Relaxation is more difficult to secure in a modern community than it was in earlier days when people lived in the country. Show that this statement is true.
 5. What were the health conditions in Panama before the United States began to build the canal?
 6. What special precautions were taken to improve the health conditions during the building of the canal?
 7. How much sleep is needed for the preservation of one's health?

We do, however, try to prevent intolerable dwellings from being used. We try to require at least a fixed amount of air space for every person, a definite amount of window space in proportion to the size of the room, air shafts in the center of large tenements, sanitary plumbing, and running water.

We are beginning to use our city officers to protect the air we breathe in public places—in street cars, public halls, theaters, and moving-picture houses. We see a danger to health in dusty streets and smoke-laden air. We are doing away with common drinking cups in public places, and with common towels.

PLAYGROUNDS AND RECREATION.

Finally, we have been learning that there is no real health without good play and a chance to be outdoors. The playground helps the city in many ways. It keeps people out of places of amusement which are not wholesome. It gives them an opportunity to meet their friends in a social way, and above all it supplies the relief from the conditions of factory life and store life which make for health. The larger parks, with their variety of attractions, call people out of doors, while a remarkably growing number of festivals and pageants is helping to make our city dwellers an outdoor people.

THE EXAMPLE OF PANAMA.

None of our cities does all these things well. We have gone just far enough to know that if we will, we can make our cities places of light and air and wholesomeness. If any city of America had a health department like that with which Col. Gorgas drove disease out of the Panama Canal Zone, a health department manned by able and devoted men, supplied with all the money they needed to spend, and freed from the hindrances that selfish and blind men put in their way, then we should realize how large an amount of sickness and early death we already know how to do away with. It is safe to say that such a city would never begrudge its money nor its trouble.

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LESSON C-20. THE FAMILY AND SOCIAL CONTROL.¹

The family was the first social institution. By the word "institution" we mean a group of people who work together permanently for some common purpose. The State is a political institution. The school is an educational institution. The church is a religious institution. The family existed before any of the others. It appears even in the animal world.

THE ANIMAL FAMILY.

The animal family has as its chief purpose the protection and feeding of the young. The lowest forms of animals, such as fishes, do not live in families. Birds have a kind of family life. Together the mates build their nests, rear their young, and migrate in warm and cold seasons. Among the higher animals like the lions and elephants the family is often clearly defined and the duties of each parent faithfully taken up.

In zoological gardens in our large cities the arrangement of the ledges in the lions' cages is one above the other. At night the lioness sleeps with her cubs on the uppermost one, while the lion stations himself below as guard against danger. A traveler in Africa reports that the male gorilla "spends the night crouching at the foot of the tree against which he places his back, and thus protects the female and their young, which are in the nest above, from the nocturnal attacks of leopards." In the animal family nature has one concern, which is the rearing and protection of the young.

THE HUMAN FAMILY AND SOCIAL TRAINING.

The human family serves as does the animal family to protect the young, but it also serves many other purposes as well. In the human family the traditions and customs of the race are handed down. Children are trained in their duties to each other and to the community. States and cities borrow many of their principles of government from the family. At the same time they expect the family to be responsible for the good behavior of its members. The State does not begin to hold a child responsible to the civil law for years after birth. During the early years of childhood the family law is the controlling force in a child's life

¹ This lesson was prepared by Ernest W. Burgess, assistant professor of sociology, University of Chicago. It shows how the rules and customs of the family help society to carry on its duties to its various members. It illustrates also what is meant by a social institution.

How far the family controls and directs the life and conduct of the ordinary boy or girl is hardly thought of, so accustomed are we to expect that the family will bring up its members aright. It is only when there is no family control that we begin to see how necessary is the family with its government to the safety of society.

FAMILY LIFE HAS MANY FORMS.

The form of family life which we all know in the twentieth century in the United States is by no means the only kind that is possible. In other lands and in other times the family has often been of an entirely different type. We shall understand our family life more fully if we contrast it with other kinds.

Perhaps the most striking contrast is that which appears in families over which the mother presides as the supreme authority. Such a family is called the maternal family.

THE MATERNAL FAMILY.

On an island in the Gulf of California off the mainland of Mexico live the Seri Indians. The members of this tribe have no permanent homes, but build out of brush temporary dwellings or "jacals" about the size and appearance of prairie schooners. They use pelican skins for clothing. The women use a thorn with its fiber as needle and thread. The Seri belle uses a shallow bowl of water for a mirror. The men use turtle shells for shields and have acquired a rude skill in chipping arrows and are adept in tipping their points with poison. If we enter a jacal in which a

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1. What other institutions besides those mentioned in the lesson can you think of in your own community?
 2. What are some of the rules or laws that belong especially to the school as an institution?
 3. What are some of the special rules or laws that belong to the church as an institution?
 4. The family is sometimes called a natural institution. What is the meaning of the word "natural?"
 5. Of all these institutions, which is the first to which a child belongs?
 6. Give examples, other than those in the text, of the way in which animal families protect their young.
 7. Give a number of examples of the way in which a human family does more for its members than an animal family.
 8. How old must a child be before the law of the State is applied to him?
 9. What is a juvenile court and how does it differ from ordinary courts in its treatment of cases?

Seri family lives, we discover a form of family government quite different from our own. The old matron has the post of honor. At the right her sons are seated in the order of their age or strength. At her left is the grown-up daughter, with her little children near her. At the extreme left, just inside or outside the open end of the jacal, squats a young man, the daughter's husband. He does not live here in the home of his wife; his home is in his mother's jacal, where he is in no fear of being driven away by his mother-in-law or brothers-in-law. He has no rights in his mother-in-law's jacal; he is not permitted to utter any command to his own children. His wife's mother and her brother, the uncle of his children, are in authority over the children. The father will have nothing to say as to what youth his daughter shall marry; her uncle will have more voice than he in the decision. But he has some control over his own sister's children, and when he dies his arrows will go, not to his own sons, but to his nephews, the sons of his sister.

This family has many curious customs which it practices at marriage ceremonies and at funerals, and strange customs in the cooking and serving of food. These strange customs are parts of an organized family life. They show the beginnings of community law. As the tribe becomes gradually civilized, some of these customs will pass into civil law as, for example, the customs with regard to property; while others will be left to be enforced within the family as, for example, the habits practiced at meals.

THE PATRIARCHAL FAMILY.

The kind of family life which we read about in the stories of the Old Testament centered about the patriarch or father of the

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1. Who is responsible for property destroyed by a child?
 2. "The family and the State make use of punishment as a means of education and control." Explain what is meant by this statement.
 3. Family life is closely related to the house in which the family lives. In the description of a family of the Seri Indians, why is the author careful to tell us about the kind of dwelling the Indians have?
 4. What does this simple dwelling indicate with regard to the intelligence of the people?
 5. What is the relation of family life to the intelligence of a nation?
 6. Preceding lessons have described the division of labor in industry. What division of labor is there in the family?
 7. What is the relation of the family to the other social institutions besides the State? For example, what decides the church to which children of a family shall go?

clan. In Japan and China the great family under the control of the patriarch can be found even to-day. It was the usual kind in old Greece and Rome. Such a family consists not only of the father and mother and children but also of the grown-up sons with their wives and children. All live together in the same house or in adjoining houses. The patriarch, or the "great father" as he is sometimes called, is the sole source of authority and has full control over all the members of the family. The sons and the unmarried daughters are absolutely dependent upon *pater familias*, the old Roman name for the patriarch. The patriarchal discipline is strict and severe. When the son arrives at the age for marriage, the bride is selected by his parents. Leaving her home, she enters that of her husband and becomes the helper of her mother-in-law. In Japan she has been carefully drilled for years in the "Three obediences": To obey her father, to obey her husband, and to obey her son. In China reverence for the authority of the patriarch is so great that religious rites in the home center about the worship of the family ancestors.

The main fact about the patriarchal family is the large control of the father over the whole social group. This broad authority exists to-day in many countries though the size of the family has been reduced from that which existed in Biblical times.

In our own country there was a time when emphasis on the authority of the father was scarcely less than in the ancient countries where the patriarch controlled the whole clan or tribe.

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1. What property rights does a child in an American family have in the possessions of his father and mother?
 2. If there are no children in the family to inherit the family property, what becomes of it?
 3. The State commonly takes from an inheritance a certain part which is known as an inheritance tax. Has the State a right to take property away from the family?
 4. Some of the customs which are practiced even among modern people, as weddings and other social occasions, are very ancient in their origin. Find out what you can about some of these ancient customs.
 5. Why should there be family customs with regard to meals, especially among primitive peoples?
 6. At the present time, because of the scarcity of food, the Government is making general regulations with regard to the serving of food on certain days. Before the war were there any restrictions on the serving of food other than the rules of the family?

In the New England Colonies family government was extremely severe. In the Connecticut Colony, for example, the statutes contained the following law: "If a man have a stubborn and rebellious son of sufficient years and understanding, viz, sixteen years of age, which will not obey the voice of his father or the voice of his mother, and that when they have chastened him will not hearken unto them, then may his father and mother, being his natural parents, lay hold on him and bring him to the magistrates assembled in court, and testify unto them that their son is stubborn and rebellious * * * such a son shall be put to death."

Puritan parents allowed little play or recreation to their sons and daughters, for they believed that "Satan finds some mischief still for idle hands to do." The boys at an early age helped their father with the farm work. The household tasks and the loom required the constant attendance of mother and daughters.

In some modern countries the authority of the father over the family is quite as strong to-day as it was in our country in colonial times. In fact the father is in authority even over the mother. Her place in the eyes of the community and in the eyes of her children is that of an elder child rather than a coordinate of the father. All this puts the father in much the same position as that he occupied in the early days of the patriarchal government. We speak of the family over which the father has such complete authority and in which the mother is subordinate as the small patriarchal family.

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1. What has been the change in the position of woman with the growth of civilization?
 2. Can you think of reasons why the severe punishments permitted in early colonial times are not sanctioned in modern times?
 3. Why were the Puritans so opposed to play or recreation?
 4. What is the modern attitude toward recreation as indicated by the effort of the school and city to supply playgrounds?
 5. How far can the present-day attitude toward recreation and leisure be explained by the fact that we can produce more easily now the food and other things that we need for life?
 6. What activities once belonging to the family have been transferred to other institutions through the growth of civilization?
 7. The law still gives the father the right to the son's wages until the latter is 21 years old. Is this law just?
 8. What does it cost a family to bring up a child to his sixteenth year?
 9. The statement that the family has grown more democratic can be said of other institutions also. Show that this is so.

THE FAMILY IN EARLY CIVILIZATION.

The earlier forms of family organization which have been described belong to stages of civilization in which the family government was practically the only form of government provided by the community for women and children. Men were commanded for the good of the community by military chiefs, but in all other respects it was the family that governed. The tribal life outside the military camp was that of the large family.

THE MODERN FAMILY.

In modern society other institutions have grown up. Education is now conducted by schools; work, by industrial organizations; religious worship, by churches; government, by the State. The loss of these activities by the family has made possible a new type of home.

The modern family is peculiarly American. The distinguishing feature is not its small size but the democratic relations within the family. The husband is no longer an autocrat, but shares with his wife the direction of the home. Since most modern industries are carried on outside the home, the severe discipline of the small patriarchal family has disappeared. The authority of the parents rests not so much on the fear of the rod as on greater knowledge and their hold upon the affection and respect of the children.

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1. In some States laws have been passed which prevent the employment of children below a certain age in the industries. Show that this legislation helps to preserve the family.
 2. What motives are there for the too early employment of children?
 3. If parents want to have their children work in a factory, has the State any right to prevent them from doing so?
 4. What is insurance?
 5. In some of the countries of Europe the government requires every one to be insured against ill health and accident. Is this a good requirement?
 6. What is a pension?
 7. What is the most common form of pension paid by our Government?
 8. Why should a mother's pension help to prevent delinquency among the children of the family?
 9. When war was declared a law was passed providing that the Army should be raised by draft. What is the meaning of this statement?
 10. What is the effect of war on family organization?
 11. What is the effect of war on other social institutions?

THE FAMILY AND SOCIAL LEGISLATION.

The community is much concerned and pays a great deal of attention through its laws to the upbuilding of the family. The prohibition of night work, the eight-hour day, and the minimum wage for women are necessary to protect the health of the mothers of the next generation. Social insurance helps to maintain normal family standards. Compensation for industrial accidents provides for the family of a workman killed or crippled by an accident. A campaign is now being waged for health insurance because it has been shown that sickness of the wage earner often causes poverty in the family and consequent breaking down of family organization. Those in favor of the minimum wage for men say that men should receive a wage sufficient to marry and rear a family without the dangers that come from insufficient employment and wages.

MOTHERS' PENSIONS.

Since 1911, 29 States have passed laws granting pensions to widows with children. That is, the States pay the mothers a certain amount of money every month. The object of these laws is to keep the family together after the death of the father. The mother who is pensioned is not permitted to seek work outside the home and so is able to give her time to the care and training of her children. In Chicago a careful study was made of 100 families receiving pensions. Only one child out of a total of about 400 children in these families had become delinquent after the grant of the pension. This shows how important it is that the mother give all her time to the care and training of the children.

1. When men are called to the Army what is the effect on the industries of the country?

2. What has the Government done to prevent industry from suffering seriously from the draft?

3. Is a man with a family dependent upon him drafted for the National Army?

4. What is meant by an exemption from Army service?

5. Why should the Government be interested in insuring men who have entered the Army?

6. What effect will this insurance plan have on pensions after the war is over?

7. Is it a wise policy for a government to treat its soldiers and sailors generously?

FAMILIES OF SOLDIERS AND SAILORS.

Over a million men are now in the Army and Navy of the United States. Before the war is over several more million men may be under arms fighting for their country. The Government is trying to prevent, so far as possible, the break-up of families. A man with a family dependent upon him for support is exempt from the draft. Many men, however, have waived such exemption, and others have voluntarily enlisted. In justice to these brave men and their families Congress passed a law approved by the President October 6, 1917, providing for allotments and allowances to their families and for compensation and insurance of soldiers and sailors. Under the allotment provisions of the law a man must allot one-half of his pay to his wife. If he is a private receiving \$30 a month, this means that the wife will receive from her husband \$15 a month. If he chooses, he may allot a larger amount from his wages. In addition, the Government will allot to the wife if she applies for it an allowance of an additional \$15 a month for one child, \$12.50 a month for a second child, and \$5 a month additional for each additional child. This generous provision makes certain that the family of the soldier will not be in need, and that his wife will not be forced to work away from home and neglect the children.

The law provides that soldiers and sailors who are permanently disabled will receive monthly pensions determined by the nature of their injuries. For example, for the loss of both feet, both eyes, total blindness, or for a permanently helpless, bedridden condition \$100 monthly will be given. The widow and children of officers or men who are killed in the service will receive pensions much more liberal than those given by any other country. In addition, the soldiers and sailors may take out life insurance from the Government up to \$10,000 at a low rate.

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Chapter VI.

BUSINESS ORGANIZATION AND NATIONAL STANDARDS.

All the lessons of this chapter relate to money. They show how a universal medium of exchange and standard of value was developed, how metals gradually came to be used in the money systems of all civilized countries, how the coins and paper money of the United States are made, and how the budget of a family may be arranged to make the wisest use of its income.

Even now in some of the remote parts of our country paper money and coins are but little used. Some of the mountaineers of the Appalachians live contentedly, rear families, and die without having had in their whole lives as much money as a city mechanic earns in a year. Mutual help and barter serve in lieu of cash. They produce their own food, weave their own clothing, build their own log cabins with their neighbors' assistance, construct their own meager furniture, and thus maintain themselves in sturdy independence, knowing and caring little what the rest of the world is doing. In some parts of Alaska "dust" is still used as currency, and every merchant has his scales to weigh the grains of gold brought to him by prospectors and miners to be exchanged for merchandise.

Such conditions are becoming more and more rare. There are not many out-of-the-way corners left in our country, for the railroads and the public schools are going everywhere and are rapidly overtaking the pioneers, carrying with them the conveniences of civilization.

The use of money is so characteristic of our civilization that it has been said that "we live in a money society." It makes it easier for each one to do the special kind of work which he can do best, instead of having to provide directly for all his own needs as the mountaineer does. Everyone can exchange his personal labor or the goods that he produces for money, which in turn he exchanges for the goods that are necessary to his own well-being. Money, therefore, forms the standard of value by which all services and goods are measured.

LESSON C-21. BEFORE COINS WERE MADE.

By KATHERINE McLAUGHLIN, teacher in the University of Chicago Elementary School.

When the agents of the Hudson's Bay Co. began to trade with the Indians they found it useless to talk about the prices of the things to be bought and sold in English money. The Indians did not want silver and gold. They wanted guns and knives and food and clothing. In return they brought furs to the trading stations. Among the Indians everything was spoken of as worth a certain number of beaver skins. Traders found that they could deal with the Indians much more easily by saying that guns and other things cost so many skins. For example, a gun cost 20 skins.

EARLY KINDS OF MONEY.

Modern civilized people like ourselves are in the habit of thinking of money as something made of gold or silver or paper. But coins and paper money are of comparatively recent origin. For thousands of years people got on with some common article of trade like the skins used by the Hudson's Bay Indians because they did not have such coins as we use now in all our buying and selling.

Many curious kinds of money have been used in different parts of the world. Those peoples who live by raising cattle very commonly rate everything as worth a certain number of cows or sheep. Even to-day the tribes in the Caucasus Mountains speak of the things they sell as worth one or more cows or as worth one-tenth or one-hundredth of a cow. The Indians were found by the early settlers in America to be using as money black and white shells which they polished and strung together in belts or necklaces. These they called wampum. In Iceland dried codfish is used. Among the fishing tribes who live along the shores of the Indian Ocean the fishhook was used as money. The California Indians were reported by one traveler to be using the red scalps of woodpeckers. These beautiful objects had a value which in our money would be from \$2.50 to \$5.

WHAT MAKES GOOD MONEY.

The reason that people pick out these things for money is not difficult to understand. In the first place, they are all things which people want either for use or for adornment. In the second

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1. What kinds of trading materials did the early Colonists use in dealing with Indians?
 2. The word "barter" means to exchange by direct trading. Give some examples of barter in modern life.
 3. A man may sell his work as well as the things which he makes. Can a man barter his services? Do you know any examples of such barter?
 4. What kinds of difficulties are likely to come up when people trade without measuring the things which they exchange?
 5. How many different kinds of materials are used for money in the modern money system?
 6. What are some of the forms of money referred to in the Bible?
 7. There are statements in the Old Testament with regard to the wealth of certain men. How is this wealth described?
 8. Is it convenient to use money as a common measure for all of the different types of wealth?

place, they are easy to carry around. In the third place, they are fairly permanent.

Suppose, for example, that a hunter, like the Hudson's Bay Indian, is fortunate and gets together a great many beaver skins. He can not use them all for himself or his family, so he starts out to trade them with people who are sure to want furs and who in turn have food or something else that he wants.

In this kind of trading the skins naturally become the counters. It is easy to see how many skins there are because each skin is a distinct object and its value can be readily seen. Counters help to make the trading definite and satisfactory to both parties.

Skins are useful as counters, too, because they do not wear out or spoil readily. Some kinds of possessions are valuable, but are perishable. A basket of vegetables, for example, is worth having, but it can not pass from hand to hand in trade as readily as furs or shells. One can not treat such things as wealth in the same way that one can treat furs and shells as permanent wealth. So it happens that the more durable and easily counted kinds of wealth are picked out by traders to be used as money.

TOBACCO MONEY IN VIRGINIA.

Another example of the selection of one article of trade as money can be taken from the early history of the Colony of Virginia. In that settlement there was very little gold and silver. The country did not have mines, and the traders who came to Virginia from other countries did not leave much silver and gold behind. The people of Virginia had to have something to serve

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1. Name a number of forms of perishable wealth.
 2. People sometimes invest money in precious stones. What is the advantage of such an investment? What are its disadvantages?
 3. Why should precious stones not be used for ordinary purposes of exchange?
 4. The Colonists of Virginia did not require for their ordinary trade any large amount of money. The same is true of a great many farming communities of the present day. Explain why a farming community needs relatively little money for its ordinary business.
 5. What is the value of the English coins mentioned in the text?
 6. Does the value of a coin change from year to year? Explain your answer.
 7. Why should the three Colonies mentioned have to enter into a treaty in regard to their money system? Would the three States at the present time make a treaty on such a matter?

as money; so they chose tobacco. This spoiled less easily than anything else they raised, and people used it commonly enough, so that it was accepted willingly by nearly everybody in the Colony. It could also be divided easily into small or large lots. The value of tobacco money in Virginia was fixed by a law passed by the first General Assembly of Virginia, which met in Jamestown July 31, 1619. That assembly, using the names of English coins, passed a law that the value of tobacco should be "three shillings the beste, and 19 pence the second sorte, the pounce."

It was soon found that tobacco could not be used as money. It was so easy to raise that people produced more than they needed. In 1666 a treaty was made by Maryland, Virginia, and Carolina that for one year no one should raise any tobacco. Again in 1683, when it became too plentiful, an effort was made to pass a law stopping the planting of tobacco for a time, and when the law was not passed bands of citizens united and went up and down the country destroying the growing crops.

THE BEGINNINGS OF METAL MONEY.

Metals gradually came into use as money. They took the place of all the other things that had been used. The metals have many advantages over skins and tobacco and other counters. They do not wear out even as much as the most permanent of the other things handled in trade. They can be divided into pieces of almost any size desired. They are easily recognized by anyone who has goods to sell or by anyone who wishes to buy.

Many stories have come down to us from ancient times which show how gold came into common use. At first, it was made into

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1. Gold and bronze were among the earliest metals found. Why are they earlier than iron?
 2. How do we know about the early use of metals by man?
 3. The early history of America is full of stories about the efforts of Europeans to find gold. What are some of the stories about European explorations made for this purpose?
 4. When was gold discovered in California? What was the result of its discovery?
 5. What other parts of the world at the present time are the chief sources of the world's gold supply?
 6. What is the importance of trade with India in determining the development of European cities and lines of commerce?
 7. Are there any modern examples which show the direct relation between the spread of civilization and the desire to secure gold?
 8. Find out why Herodotus is called the father of history.

jewelry, such as finger rings and earrings, or it was made into cups and vases. In these forms gold, like other articles, was valuable for special purposes other than money. The ancient peoples of Greece brought it from India or from Africa.

THE STORY OF THE ANTS.

The Greek historian, Herodotus, tells an interesting story about the curious way the inhabitants of India got some of their gold. He says that north of India is a desert the lower sands of which are gold. In this desert lives a race of huge ants, in size between dogs and foxes. When burrowing, these ants bring up the gold and pile it in great heaps. The gold seekers of India go to this desert, and awaiting the moment when the ants go down into their burrows to escape the heat of the sun, gather up the gold and carry it away as fast as they can.

GREEK MYTHS ABOUT GOLD.

This story told by Herodotus is like the Greek myth of Jason and the golden fleece. Both stories point to far-away countries where gold could be secured with great effort after many hardships. While the stories are only half true, they show how eager the Greeks and other peoples of antiquity were to get gold and why they prized it as of such great worth.

OTHER METALS USED AS MONEY.

It was not until a much later day that other metals came into common use. When bronze and iron came these, too, were used for money.

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1. Find out about the myth of the golden fleece.
 2. What are some of the other Greek myths that have to do with the travels of Greek heroes?
 3. What was the chief occupation of the Spartans, and who were their chief rivals?
 4. Find out about the history of the Carthaginians and explain the reasons for the development of their trade.
 5. What other nations of the ancient world developed trade on a large scale?
 6. Describe some of the wars which resulted in the ancient world from rivalry in trade.
 7. The present war has sometimes been described as due to trade rivalry. What is the ground for that statement?
 8. Where was Libya and what are the Pillars of Heracles?

There are parts of China where iron hoes were long used as money. When they were not passing from trader to trader, they were turned to the practical work of tilling the soil. In ancient Sparta, iron money was used. It is said that this kind of money discouraged anyone from wanting to be overrich, because it was too heavy to carry around conveniently. The usefulness of iron in making spearheads doubtless explains the real reason why the Spartans were so anxious to get possession of iron.

EARLY TRADING BEFORE PRICES WERE FIXED.

After gold came into common use it became an article of trade, and so began to be a kind of money. However, it was not yet made into coins. The result was that a great deal of difficulty arose in setting prices on the things bought and sold because there was nothing which could be used as coins are to-day in setting values on things. Herodotus tells a story about the trading of the Carthaginians with the nations on the west coast of Africa which shows one way in which exchange for gold was arranged in that early time.

The Carthaginians also relate the following: There is a country in Libya and a nation beyond the Pillars of Heracles, which they are wont to visit, where they no sooner arrive than forthwith they unlade their wares, and having disposed them after an orderly fashion along the beach, leave them and returning aboard their ships, raise a great smoke. The natives, when they see the smoke, come down to the shore, and laying out to view so much gold as they think the worth of the wares, withdraw to a distance. The Carthaginians upon this come ashore and look; if they think the

1. Look up the derivation of the different words used in the table of weights and find out what were the sources of these different names.
2. Do the same for the units of volume.
3. What is the relation between standards of weight and standards of volume in our modern systems?
4. What is the source of the units in the metric system? How do these measures differ from the measures in the English system?
5. Modern systems of measurement, like the metric system, have been based upon careful measurements of certain dimensions of the earth. What is the advantage of basing a system of measurement on the dimensions of the earth? Why should this method of deriving measures be called scientific?
6. Show that the measurements of time are naturally more scientific than the measurements of linear distances and volume.
7. Why should weight be an especially difficult matter to standardize?

gold enough, they take it and go their way, but if it does not seem to them sufficient, they go aboard once more and wait patiently. Then others approach and add to their gold till the Carthaginians are content. Neither party deals unfairly with the other, for they themselves never touch the gold until it comes up to the worth of the goods, nor do the natives ever carry off the goods till the gold is taken away.

WEIGHING SYSTEMS NECESSARY.

Traders were not always so fair in their dealings as those described by Herodotus, and so it became necessary to invent some way of measuring gold more exactly. Everybody measured gold by weighing it. The stories in the Bible about talents relate always to gold which had been weighed, for a talent is a unit of weight.

Ancient traders lacked one of the modern conveniences which we use all the time without considering how valuable it is. They had gold and they had weighing balances, but they had no standard weights. To-day, if one wishes to know how much gold he has, he can put it on the scales and note its weight in grains, ounces, or pounds. In early days, however, there were no standard weights any more than there were coins made by the Government. The traders had to find something that would serve fairly well to put into the weight pan of the scale. That something had to be as uniform in weight as possible.

WEIGHTS FROM GRAINS.

The first weights which were used in measuring small objects were grains of wheat or barley. These are uniform enough for three grains to be always much like three other grains. The word "grain" which we use in our tables of weights shows that our early ancestors got their weights in the way described. In

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1. Why should standards of weight come to be matters of Government control?
 2. How is the word "carat" used in modern times?
 3. Explain what is meant by the statement which has been repeatedly made in the text that money is a means of measuring values.
 4. What is the difference between the unit of values in this country and in some other countries?
 5. The statement is frequently made that a foreign coin is worth a certain amount of money in the United States, but this amount is changed from month to month and sometimes from day to day. Why should there be a difference at different times in the value of foreign coins in terms of United States money?
 6. How can the purity of a metal which is used in coins be measured?

other languages, too, there are tables of weights which go back to grains. The table of weights for gold and silver and medicine in Persia when translated runs as follows: The smallest weight is 1 barleycorn; 3 barleycorns equal 1 pea. The Arab system begins with the grain of wheat, four of which equal a *karat*, or seed of the carob.

We see that the whole matter of weights and measures is very closely related to the matter of standard coins and money. A modern coin weighs a definite number of grains and is made of metal of a certain purity. We think of coins as counters by which men measure values. These counters could not be made with exactness as they are to-day until a system of precise weighing was worked out.

GOVERNMENT STANDARDS.

These facts show us, too, why the Government takes a hand in the matter of both weights and coins. Trade could not go on without accepted standards, and these must be set up by some authority in which everybody has confidence.

The Government of every civilized nation has in its possession what are known as standard weights. These are copied by makers of scales. There are also Government testers who go about making sure that traders are using honest scales. In the same way the Government has fixed by law the weight and purity of metal that goes into coins. The stamp of the Government on a coin is a guarantee that the coin is of an exact weight and kind. This gives traders what is known as a standard unit of value. Modern trading is much more extensive and exact than ancient trading because of these well-established and well-guarded standards.

It is a long history from the simple trading, with skins and tobacco as the standard, to modern coins and weights protected by the Government. This history is what we refer to when we say that civilization has adopted better and more exact methods of living than savages or half-civilized peoples knew anything about.

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LESSON C-22. THE MINTING OF COINS.¹

The reasons why metals came to be used for money were given in the last lesson. In this lesson we are to study minting, which is the process of making metal into coins. In the earliest days gold and silver were used for many practical purposes, and they were exchanged by traders just like any useful article. As their permanence came to be recognized and they began to be used as money, other things were more and more described as worth so and so much gold. The gold was not yet in the form of coins. Crude lumps of the metal were used, or the metal was made into rings or ornaments or weapons, or it was passed from hand to hand in rough bars.

WEIGHT AND ESTIMATE OF QUALITY.

It was always necessary, as was pointed out in the last lesson, when gold and silver were to be used in purchasing things, to find out how much the ring or the bar weighed. It was also necessary to decide something about the purity of the gold, for gold is commonly mixed with other metals. Traders carried scales with which to determine the weight, but as a variation in weight of only so much as an ounce meant a difference of many dollars, disputes and wrangling over the weight of money were incessant. It was still harder to determine the purity of metals; and although traders became very skillful in detecting the quality of gold, most people were not expert, and losses were an everyday occurrence.

THE GUARANTEE OF A STAMP.

In time, people came to understand the necessity of having reliable money. Then certain persons began to stamp both the quality and the weight on the bars of gold. So long as people believed in these stamps, trade was made very much easier. But dishonest dealers deceived people by stamping the metal falsely; so it finally came about that these bars were accepted at the weight and fineness stamped on them only when the stamps were those of kings and rulers or of well-known traders of good reputation.

¹ This lesson was prepared by Ruth Reticker, of the School of Commerce and Administration of the University of Chicago. It describes the way in which coins are made. Its purpose is to show how the National Government controls the money system of the country.

THE BEGINNINGS OF COINAGE.

The next step of progress was made when the bars of metal were divided into small pieces that could be easily handled and easily recognized as uniform. At this stage we come to what is known as coinage.

Coinage seems to have begun in China in the twelfth century B. C., and independently in Lydia four centuries later. The Chinese coins were cast in molds, the impression on the coin resulting from the design modeled in the sand into which the hot metal was poured. The Lydian coins were made by striking metal between two patterns or dies. The anvil on which the lump of metal was placed had one pattern, and the hammer with which it was struck contained the other. A blow forced the metal down into the pattern on the anvil and marked the top of the coin with the design on the hammer.

Coinage was introduced by the Greeks into Italy and the other Mediterranean countries. The convenience of coinage in all kinds of trade was so great that after its introduction it continued without interruption. In the Middle Ages cities as well as states made coins, and barons and bishops as well as kings. But as countries became larger, as traders traveled more widely, and as machinery for making coins became more complex and more expensive, coinage was given up by cities and smaller divisions of the Nation and was turned over entirely to the National Governments. This insures general uniformity; that is, one may be certain that all the coins of each denomination are of the same weight and of the same quality.

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1. How is gold obtained from the earth? How is silver procured?
 2. What influence does the ease of procuring a metal have on the early history of mankind?
 3. What is a common denominator? Why is money sometimes called a common denominator of commodities?
 4. Why would the following not make good money: Iron, tin, corn, wood, alcohol, cattle, cloth?
 5. What does the early appearance of coins in China and Lydia show about the civilization of those countries?
 6. Why are ancient coins valuable to-day?
 7. Why are coins not molded rather than stamped to-day?
 8. In the Middle Ages one could not journey so much as 25 miles without having to have his money changed. Why are money changers not necessary when one crosses from one of our States into another?

Early coins had no dates on them, and it is possible to find out the period to which they belong only by recognizing the figure or by making out the inscription. It is often of great importance to the historian that he be able to place a coin in its proper period, because of all the records which have come down to us coins are among the most permanent. The designs often show not only the ruler, but the costumes, implements, and buildings of the period to which the coins belong.

The history of coins is also of interest because many rulers tried the experiment of making cheap coins in order that they might themselves gain wealth. Such experiments always fail in the long run. A coin must be exact and true and must have the guarantee of an honest Government or it will not be accepted by those who buy and sell.

The experience of the United States shows the importance of giving the power of coinage to the National Government. In colonial times the different Colonies had different systems of money. If a farmer in Vermont traded across the border in New York, he had to do a problem in arithmetic to know how much his Vermont money was worth in New York. This greatly interfered with trade. So after the Revolutionary War, when the National Government was formed, Vermont and New York and the rest of the States gave up all right to coin money and now the National Government alone has that right.

The coins of early days were not very perfect, nor were Governments able to prevent fraud. People often used base metals and imitated the true coins. For example, they made coins of cheap lead. This is called counterfeiting. It was also easy to file or

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1. Why did early coins have no dates?
 2. Look up the history of the calendar and find out who is chiefly responsible for giving it its present form. Explain why.
 3. See if you can get a picture or description of some ancient coins.
 4. What is a pound troy? What is a pound avoirdupois? Are they of the same weight? Which system is used for weighing gold and silver?
 5. Did Robinson Crusoe have money on his desert island? Did he need it?
 6. In what States are the assay offices located? Can you see any reason for this?
 7. In 1916 the United States mint at Philadelphia made coins for Cuba, Colombia, Ecuador, Salvador, Venezuela, and Peru. The San Francisco mint made coins for the Philippines. Where are these countries? Why did they not make their coins at home?

clip off pieces of coins and attempt to pass them on as of full weight and value. So bad was the currency in England as late as 1695 that Macaulay tells us that "nothing could be purchased without a dispute about the value of the coins given in exchange. Over every counter there was wrangling from morning to night * * * and it was well if no booth was overturned and no head broken." To-day the coins themselves are better made and the Government is better able to protect its people from fraud of the kinds described. How important this protection is can be judged from the fact that the framers of the Constitution of the United States made special mention among the rights and duties of Congress of that of preventing counterfeiting.

A description of the way in which our Government makes its coins will be instructive not only because it shows how exact coins are in modern use, but also because it shows how the Government contributes to the everyday life of people in their buying and selling.

COINAGE IN THE UNITED STATES.

Our Government maintains assay offices to receive gold at New York, Carson City, Helena, Boise, Salt Lake City, Deadwood, and Seattle, and refineries at New York, San Francisco, and Denver. All the coins for the country are made in mints at Philadelphia, San Francisco, and Denver.

Gold and silver come to the assay offices from the mines in the form of bullion. This is never pure gold or silver, for these metals are found in nature mixed with other metals. The assay office must be able to tell how much pure gold there is in a bag of bullion

1. A mint was established at Dahlonega, Ga., in 1838. It was closed in 1861. See if you can find in your history any reason for this.

2. Can you find any reason for the opening of the mint in San Francisco in 1854 or the suspension of the New Orleans mint in 1861?

3. What is the penalty for counterfeiting?

4. Can you think of any reasons why coins are made round? What would be the disadvantage of square coins?

5. A Canadian dime passes at par in Minneapolis, but is worth only 8 cents in St. Louis. Can you see any reasons for this? Would the situation be the same with gold money?

6. Where should you expect to find foreign money in use in the United States?

7. List all the uses you can, besides coinage, to which gold and silver are put.

8. What does one do with a badly worn coin?

so that the Government will pay the proper amount for the gold it buys.

ASSAYING, REFINING, AND ALLOYING.

The bullion is first weighed by two different men, one checking the other. Then it is melted, stirred until thoroughly mixed, and poured off into iron molds to cool in bars, which are made too heavy to be carried off easily. Small pieces are clipped from opposite ends of the bars and each piece is tested by a different assayer. If their reports of the quality of the bullion do not agree within close limits, the bars must be returned to the melting pot and the tests repeated. When the fineness of the bars are agreed upon, three different men compute the value of the gold. If other metals which are of value to the mint are found with the gold, these are bought, too.

The gold bars pass next through the refinery, where the impurities are removed by chemical processes. The refined metal is not yet ready to be coined, for pure gold is very soft. To make it hard, so that our coins will not wear off quickly, copper is added. This produces what is called an alloy. The United States mints use one part of copper to nine parts of gold. Therefore our coins are said to be 0.900 fine. It is impossible to make this mixture of metals exactly 0.900 fine, and so slight variations are allowed. So carefully do Uncle Sam's chemists work, however, that in 1916 they kept within limits of 0.8996 and 0.9003.

THE COINING PROCESS.

When the alloyed money metal is thoroughly mixed, it is poured off to cool in bars or ingots. These ingots are then rolled between

1. See if you can tell without looking at them what is the design of the latest cent, nickel, dime, quarter-dollar, and half-dollar.
2. Examine all the coins you can secure. What pictures are on them? What words?
3. What is the difference between the American eagle and that which appears on German coins?
4. There are on certain coins marks which show where they were minted. Find one.
5. People collect rare coins. What are some of the most interesting?
6. Some coins are made only in small numbers for various reasons. The issue is then stopped and the coin becomes a curiosity. There was a 5-cent piece a few years ago without the word "cents." Find other examples.
7. In the newest coins the design is sunk below the rim. Why?

rollers to reduce them to the thickness of the coin to be made. The flattened strips are passed through a machine which cuts out blanks or metal disks slightly larger than the finished coin. These blanks are weighed carefully, for the Government has very high standards of accuracy. If the blanks are too light, they are sent back to be melted again. If they are just a little too heavy, they are filed down. The blanks are then put through a machine which compresses them around the edge, forcing the metal up into an even raised rim. This rim protects the designs stamped on the coin.

The blank is now ready to be cleaned and stamped. The stamping is done by an automatic machine which makes eighty 10-dollar gold pieces a minute. The blank is placed on the lower of two dies and the upper die is brought forcibly down on it. A pressure of 120 tons is used to produce a clear, sharp impression. The coin is kept from spreading by being held in a steel collar. The collar has a grooved surface which produces the markings on the edge of the coin called milling. The coin is now finished, but before it is ready for circulation it must be tested again, by weight and by ring. A coin which has a hollow spot or bubble in it will not ring true. A coin not correct in weight is melted again. It is said that every coin is weighed 20 times before it leave the mint.

COINS FOR SMALL CHANGE.

Our gold coins are made in four sizes: \$2.50, \$5, \$10, and \$20. Larger coins are not made ordinarily, because they are hard to

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1. Why is our small change not made of gold?
 2. Can you think of any reasons why silver dollars, gold dollars, half-dimes, and 2 and 3 cent pieces are no longer coined?
 3. What would be the advantage of a 2½-cent piece? Of what metal would it probably be made?
 4. What are some of the prices that can not be easily expressed in our coinage?
 5. What coins are used in Canada to-day? In England? In France? What are they worth in United States money?
 6. What does the word "token" mean?
 7. What is an alloy? Mention some alloys which we use.
 8. Can you see any reasons why the Government should make such exact requirements of the composition of the alloy of our coins and the weight of our coins?

coin, too heavy for convenient use, and because the inside might be removed and the coin filled with a less valuable material. Smaller coins are not made, because they wear off too quickly and are easily lost and hard to handle. Gold dollars were made until 1890; but they were too small for convenient use, and so have been abandoned. For everyday business we need coins of small denomination, even smaller than a dollar. In addition to gold coins the Government makes coins of silver and nickel and bronze, which are called the baser metals, because they are less valuable than gold.

Silver half dollars, quarter dollars, and dimes, nickel 5-cent pieces, and bronze 1-cent pieces are made every year in great numbers. In the calendar year 1917, 57,204,000 new dimes and 190,299,677 1-cent pieces were put in circulation. The bright, new coins are usually issued in great numbers just before Christmas.

TOKEN MONEY.

Gold coins are worth as much for other purposes as for coins. They can be melted and used for jewelry, scientific instruments, dentistry, and other practical purposes, and the bullion is of equal value with the coin. Gold coins pass from one country to another by weight. But coins of other metals are token coins—that is, they are worth more as money than they would be as metal. They pass for the sum stamped on them because the Government puts its mark on them and stands ready to redeem

1. When a business establishment opens in the morning, it has to provide itself with a certain amount of coin for the day. Where does it get this coin?

2. Find out from different business establishments what kind of coin they need most commonly. For example, does a 5 and 10 cent store use the same kind of coin as a jewelry establishment?

3. What does a factory need in the way of coin on ordinary days?

4. What does a factory need in the way of coin on pay day?

5. How much coin does a business man carry around under ordinary conditions?

6. What does a traveling man start out with when he goes on a journey?

7. Get an opportunity to watch some expert cashier make change. Find out by inquiry some of the methods used by this cashier.

8. When one has things charged at a store, one is depending on credit rather than coin. What is credit, and how is it related to coin?

them in gold, and also because the law has made them "legal tender," up to certain amounts, in payment of debts.

WORN COINS.

In spite of the care the Government takes to make alloys which are hard and to harden the coins further by stamping them under great pressure, in time the design wears off as the coins rub together in our pockets. For this reason the coinage in circulation has to be renewed about once every 25 years. Old and worn coins are sent by banks to the Government, where they are exchanged for new ones. The worn coins are melted, and the metal is used again in making new coins by the same process as was described for coins made of crude bullion. Foreign coins are also received at the assay offices and go into the melting pot to make United States money.

THE DESIGNS ON COINS.

The designs on coins are worth noticing. From the first, coins have been stamped with mottoes, with portraits of deities, heroes, or rulers, with symbols of the life of the people. One of the most common designs for coins contains a portrait of the reigning monarch. The English have such a coin called a sovereign. In a republican form of government, like ours, no person could claim the right of a sovereign; so the eagle, the symbol of American liberty, was chosen to figure most prominently on our coins. The gold pieces are commonly called eagles, half eagles, double eagles, etc. The figure of the eagle is used also on silver coins. The newest cent bears a portrait of President Lincoln, but this was not issued until long after his death.

The new series of coins issued in the past few years were designed with unusual care and set a new standard in artistic minting. More than 50 sculptors made sketch models for the dime, quarter dollar, and half dollar when the designs were changed last year.

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LESSON C-23. PAPER MONEY.¹

In the same way that we use silver or nickel or bronze coins to represent gold in amounts too small to be coined and handled easily, so we have paper money representing amounts of gold or silver too large to be handled conveniently. The simplest forms of paper money are our gold and silver certificates which certify "that there has been deposited in the Treasury of the United States" the amount of the note in gold or silver, as the case may be. All one needs to do to get gold or silver for one of these certificates is to ask the Treasury to redeem it, that is, to pay coin for it.

One does not have to have a very fat pocketbook to see the advantages of paper money over coins. Twenty dollars in silver or gold is 20 times as heavy as one dollar, but a \$20 bill weighs no more and takes up no more space than a \$1 bill, and as amounts are increased this advantage becomes even more evident. A paper bill for \$20 weighs about 20 grains, while a \$20 gold piece weighs over 450 grains. Think how inconvenient it would be to pay for a horse or a house with coins or even to carry the necessary money for ordinary traveling expenses in the form of silver or gold coins.

Another advantage of paper money is that the loss due to wear is much less than in the case of gold. An ounce of pure gold is worth \$20.67, and whatever portion of a gold coin is worn off through use is a complete loss to the Government. An ounce of paper is worth but a few cents at most; and the use of paper money in the place of gold saves the United States a great many thousands of dollars every year.

THE HISTORY OF PAPER MONEY.

Paper money was not common in Europe until after the invention of the printing press in the fifteenth century. Pasteboard tablets, the size of silver dollars, were once used in Holland, but a piece of thin paper on which is an elaborate design is now the most common form for paper money.

In the United States the present Bureau of Engraving and Printing was organized under act of Congress July 11, 1862. It is the Government factory for making paper money, bonds, revenue

¹ This lesson was prepared by Ruth Reticker of the School of Commerce and Administration of the University of Chicago. It describes the making of paper money. Its purpose is to show again the way in which the National Government controls the money system.

and postage and custom stamps, checks, drafts, and important engraved documents. It is the largest engraving and printing plant in the world. Only the engraving and printing are done there. The paper, ink, and other supplies have to be brought from other places where they are prepared.

WHY THE GOVERNMENT CONTROLS PAPER MONEY.

Since the value of the paper in a \$1 bill, or in a \$1,000 bill, is very slight, private persons might be tempted to make great quantities of paper money if the Government did not forbid it. Even as it is, the Government has some difficulty in preventing the counterfeiting of paper currency. There is much more profit to be made in counterfeiting paper money than there is in counterfeiting the token coins about which we studied in the last lesson. The Government has prescribed heavy penalties for counterfeiting, and it has also invented a method of making paper money which is exceedingly difficult to imitate.

SPECIAL PAPER USED FOR MONEY.

The paper used for money is of a special kind. Instead of being made from wood pulp or common rags as ordinary paper, it is made of the highest grade of material. Only new clean linen rags, the remnants from factories making linen goods, are used in the Government mills at Dalton, Mass., where paper for our money is made by a secret process with very powerful and very expensive machinery.

If you will hold any paper money to the light, you will see two rows of silk threads in the paper. These short pieces of silk

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1. What is the weight of 100 dollars in silver money?
 2. What would be the weight of the same amount in copper and in gold?
 3. Examine carefully the designs on different postage stamps and explain why these designs are different and why they are so complicated.
 4. Remember, without looking at the bills, as much as you can about the designs on different kinds of paper money.
 5. In order to test your memory for familiar objects, draw on a piece of paper a figure showing the exact dimensions of a dollar bill. On this figure show where the amount of the bill is indicated.
 6. Many of the designs on paper money are intended to represent some fact of history. Examine several different denominations of bills and describe the pictures and show what they mean.
 7. If a person has a counterfeit bill and tries to pass it in trade, is he subject to punishment for merely having the bill?

thread, which were sprinkled on the paper while it was a web of pulp, are what distinguishes money paper from all other paper. The Government forbids the making of other paper containing silk threads; it counts it a crime even to have such paper in one's possession. All of this is to protect our money against imitation.

ENGRAVING THE PATTERN.

In making paper money, the first step is the preparation of the design. This is very carefully drawn on paper by expert draftsmen, and for the sake of accuracy it is made several times as large as the actual bill. When it is approved, a photographic copy of the exact size to be used on the bill is made. This photograph is then copied by skillful engravers on a polished steel plate called a die.

Several different men work on every design, each doing the part he can do best. One man makes the portraits, one the ornaments, one the letters, one the facsimile of signatures, and so on. The scroll or lacework on the back of the bill is the only part which is not done by hand. A machine called the geometric lathe has been invented to do this. This machine costs \$5,000 and can be operated only by an expert mathematician. It can make 20,000,000 different patterns with lines drawn so close together that they can be counted only with the microscope.

The various parts of the die require such delicate work that it takes about two months to complete the pattern. When the pattern is finished, a proof sheet is printed from it. This one proof is the only copy printed from the original die.

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1. What are the different kinds of material used in making paper?
 2. What is meant by different grades of paper and what are the reasons for different prices for these different grades of paper?
 3. What are the different stages in the manufacture of pulp into paper?
 4. Why should the Government mills for making paper be located in Massachusetts rather than in Washington?
 5. If ordinary paper is held to the light, a mark is frequently seen, indicating the quality of the paper. Why does the Government paper have a different kind of special mark?
 6. What are some of the methods by which ordinary pictures are printed in books?
 7. What is wood cutting?
 8. Photographic methods are sometimes used in reproducing pictures. Distinguish some examples of the different methods of printing pictures.

MAKING THE PLATES.

When the proof has been approved by the Secretary of the Treasury, the die is hardened by an appropriate process. Impressions of it are then made on soft steel rollers. The rollers then are reversed duplicates or molds of the original die. The rollers are also hardened and impressions of them are once more made on soft steel plates. These second plates are, of course, exactly the same as the original die. As many of these can be made as are needed. It is these final plates which are used to make the impression on the paper. By not using the die to print bills but only to make plates, one original die can be used to make any number of printing plates. The printing process is much more rapid when several printing plates are at hand, and the original die is saved from the wear of actual printing.

PRINTING THE BILLS.

Paper money is printed on a hand press, because none of the many mechanical methods which are used in printing can do such good work. The paper is dampened before printing by being pressed between layers of wet cloth. The printer inks the plate, covering the entire surface, then wipes the plate with a cloth, leaving the ink only in the engraved lines. Then the plate is polished with a whitening substance, the paper laid on, and the impression made. One printer, with a girl assistant, averages from 800 to 1,000 impressions a day, printing four bills at each impression. The reverse side is printed first and the bills are dried by steam. Then by the same process the face side is

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1. How can one tell from a specimen whether it is printed from type or from an engraved plate?
 2. What is lithographing?
 3. How does the printer produce colored pictures?
 4. What is used in making printers' inks and how do such inks differ from writing ink?
 5. What are the materials used in making type?
 6. Why is engraving done on other forms of metals than that used for type?
 7. What are the different materials used in making engravings?
 8. What is a check? Does a check serve any of the uses of paper money? Why does a check not pass for money as easily as paper money?
 9. At the end of the Civil War, Confederate paper money had no value? Why was this?

printed. Then when the sheets have been dried again, the edges are trimmed, the serial numbers and the official seal put on.

The four bills on each sheet are cut apart by mechanical knives, counted out in packets of 100, and then into packages of 4,000 notes each. They are delivered to the Treasurer, who verifies the count, and seals and labels every package. They are then taken to the Treasury and stored in the reserve vault until required for issue.

Every day the Bureau of Engraving and Printing makes more than three and a half tons of paper money. This means two and a quarter million bills, having an average face value of \$9,000,000. If laid out flat, they would cover 9 acres or about 4 city blocks, and if placed end to end, they would make a chain 250 miles long.

CARE IN HANDLING BILLS AND DIES.

The Government is even more careful about the handling of paper money than it is about the handling of metal money, since it is so much more valuable in proportion to its weight. The sheets of paper upon which the bills are printed are counted after passing through each pair of hands, or about 50 times in the process of making a bill. Each division of the Bureau of Engraving and Printing accounts for every sheet of paper it has had during the day before any of the workers are allowed to leave the building. Also every plate is checked and returned to the vaults at the close of the day's work. None of the employees is

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1. Most printing on large presses is not done directly from type, but indirectly from plates made from the type. Why?
 2. Find out the way in which ordinary printing plates are made.
 3. Look up the history of printing and find out what kind of presses were used at first.
 4. Who invented the great cylinder press used in printing newspapers?
 5. Why is the printing of bills done by a hand press?
 6. Find the serial number on a bill. What is the need of such a number?
 7. Coins have dates stamped on them. Do bills?
 8. Paper money is used more largely in the East than in the West; in the cities than in the rural districts. Can you think of any reasons for this?
 9. These lessons were printed at the Government Printing Office in Washington, but paper money and stamps are made at the Bureau of Engraving and Printing. Why should the Government have two such plants? Can you explain the different kinds of work they do?

permitted to leave the building for lunch, the meal being served in a room the Government provides for that purpose. At night the finished and unfinished bills are stored in a vault of reinforced concrete, in which is a mesh of wires. Special protection against fire is provided, and a burglar alarm is connected with the Treasury Building and with the office of the captain of the watch. The bureau prides itself on its record. No one of its employees has ever engaged in counterfeiting, and not even a 1-cent stamp has been lost. At the Treasury and subtreasuries in different parts of the country similar precautions are taken in receiving and distributing the bills.

WASHING PAPER MONEY.

The bills are turned out crisp and crackling, but it is not very long before they become limp from handling in pockets and bill-books. Of course, the bills for small amounts change hands more frequently than the bills of large denominations, and consequently wear out sooner. The average life of a 1-dollar bill is but 12 months. The wearing out of bills is a big item of expense, as the method of printing paper money which has been described costs our Government $1\frac{1}{3}$ cents for each bill made. Also, bills that are to be replaced must be carefully destroyed, and this costs the Government one-fifth of a cent for each bill.

It is clear, when one considers the millions of bills in circulation, that it would be worth while to find some way of renewing the life of the original bill. In 1910 special laundry machinery was invented to wash paper money. The process is not very dif-

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1. Some paper money is called bank notes. Why?
 2. Some bills are called silver certificates, others gold certificates. Get examples of the two kinds.
 3. Is there any difference in the value of the two certificates of these two types when they are of the same denomination?
 4. Why are bills counted so frequently during the process of printing them?
 5. What precautions are taken in banks to provide against loss of money? What precautions are taken in ordinary business establishments?
 6. Who pays for the making of bills and for the cost of renewing them?
 7. On what kind of bills is yellow ink used?
 8. Calculate from the facts given in the lesson the number of bills that are laundered each year.

ferent from that used in laundering collars. The bills are placed between blankets in a special washing machine and washed with a soap made of potash and oils. This soap dissolves the yellow ink used on some of our bills, so only greenbacked bills are washed. After the bills are washed, they are starched with a mixture of glue and alum, called a sizing, which makes them crisp again. They are dried by an air blast and ironed over a steel cylinder. The whole process of handling 1,000 notes takes only 10 minutes and costs but a tenth of a cent a bill, just half as much as it would cost to destroy it. The system saves the Government a large sum every year. But a bill can only be laundered once, and then will not last as long as a new one. Thus, the 1-dollar bill which came back to be washed 12 months after it was printed, in six months more will have to be destroyed.

Besides the natural wear on bills in passing from hand to hand, there are accidents which make them unusable. Some bills are accidentally burned or torn, or they are chewed by mice or rotted by damp. In such cases the person who has the bill does not lose its value if enough of it remains to identify it. Charred bills, even when burned so much that they are falling to pieces, are redeemed if it is possible to trace the engraving. Mutilated money also is redeemed at the Treasury. If three-fifths or more of a torn bill is mounted on white paper and sent to the Treasury, it is redeemed at face value. If more than two-fifths of the bill, but less than three-fifths is recovered, the Government will pay half of its value. If less than two-fifths remains, the Government can not redeem it, as someone might obtain the missing portions of the bill and present it for the full amount.

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1. Paper money merely represents gold, silver, or some other form of wealth. For every bill there must be some real wealth. Can you see the relation between this fact and the care in destroying paper money?
 2. Why should different people be concerned in opening the macerator?
 3. How does an ordinary citizen get the money on a bill which has been torn or partially destroyed? Must he take it to Washington?
 4. Why is not the pulp from the macerator used in making paper for new bills?
 5. Does the paper money of other countries look like American bills? Get specimens, if possible.
 6. Do foreign bills pass as readily in this country as foreign coins? Why?
 7. How does one get money when one travels in a foreign country?
 8. What happens when a government issues more paper money than it ought to issue in view of its silver, gold, and other forms of wealth?

DESTROYING PAPER CURRENCY.

When paper currency becomes worn and mutilated, the banks and subtreasuries send the old bills to the Redemption Division of the Treasury and receive in exchange new ones. The old bills are then destroyed. At every stage great care is taken to provide against error and loss. The money is counted and recounted by different groups of experts. It is then strapped into bundles and canceled by a machine which punches four holes through the notes, two through the upper half and two through the lower half. The notes are then cut in two lengthwise by a huge cutting knife.

From the knife the bills go to the macerator. The macerator is a large spherical tank of steel containing water and fitted in the inside with 156 closely-set steel knives. The massive lid is held in place by three Yale locks, each with its own individual key. The key of one lock is held by the Treasurer, of another by the Secretary, and of the third by the Comptroller of the Currency. At 1 o'clock each day these officials or their deputies open the macerator and dump in notes representing approximately a million dollars. The machinery is put in motion and the revolutions of the macerator and its knives reduce the old currency to a pulp which is later rolled into sheets and sold for \$44 a ton. The capacity of the macerator is one ton of pulp. The largest sum ever put in the macerator in one day was \$151,000,000, destroyed June 27, 1894. It consisted of bank notes and United States bonds.

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LESSON C-24. MONEY IN THE COMMUNITY AND THE HOME.¹

You know that it costs money to build schoolhouses, repair them, and keep them warm and clean. It also costs money to buy and keep in repair the furniture in the school. Besides this teachers must be paid, and so must the superintendent of schools. You have roads and perhaps sidewalks in front of your houses and bridges over the streams. These also cost money. Perhaps there are in your community a poorhouse and a jail to be supported, and policemen, judges, town or city clerks, and other officials who must be paid. Perhaps you also have a public library and public playgrounds or parks that cost a good deal of money to buy, equip, and keep in order. Have you ever wondered where the money comes from to pay for all these things? In the early days in our country each man paid for his own children's schooling and did a good deal of his own road building. There were then very few policemen or other officials to be paid or playgrounds to be kept in order. Now there is much of this kind of expense known as public expense. You should find out what you can about the amount of money spent for public expenses in your community and where the money comes from. Ask some one to tell you about it, and if possible look in the reports of your city or town to find out what things are paid for at public expense and how much they all cost each year.

COLLECTING MONEY THROUGH TAXATION.

In answering the question where this money comes from which is spent by the public we need to find out about taxes. Perhaps you have heard your father say something about taxes being very high this year. In most places in the United States each man, besides paying a poll tax of one or two dollars a year, must also pay taxes on all the property that he owns. If the value of what he owns is \$1,000, perhaps he will have to pay a tax of \$15 on it each year. In the same place a man who owns \$2,000 worth of property will have to pay \$30 each year. Each man pays taxes according to the amount of property he has. It is through taxes that the Government gets the money it uses for all public purposes; that is, each citizen must help pay for whatever the public provides.

¹ This lesson was prepared by Edwin A. Kirkpatrick, head of the department of psychology and child study, State Normal School, Fitchburg, Mass. The distribution of family income and expenses, as well as the planning of personal expenditures, are matters which should be taken up as a part of the education of every school pupil,

If in a town where property owners have been paying \$15 for each \$1,000 worth of taxable property a new schoolhouse or many new roads should be built, it would probably be necessary for each property owner to pay a larger tax, perhaps as much as \$18 or \$20 per thousand. Public property is paid for in money just the same as articles which we buy for use in the home. If those who build roads waste their time and materials, or if children cause much damage in the schoolhouses and the parks, if too much money is spent for anything that is bought at public expense, or if there are too many people in poorhouses and jails, all owners of property in the town will have heavier taxes to pay than they would if everyone helped to take care of public property and if all public officials worked efficiently and spent money wisely.

COUNTY AND STATE PUBLIC EXPENSES.

In looking up these facts about public expenditures, or perhaps by looking at a tax receipt, you may find that, besides the taxes of the town or city, something is said about county and State taxes. You will find that public money is used by the county and State. Perhaps you know of a county road or bridge, courthouse or jail, or a county school. Every person in the county must pay his share of the cost of building and maintaining these county properties.

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1. Make a list of public expenses in your town or city which are not referred to in the lesson.
 2. Draw a line 10 inches long to represent the total public expense of your town or city. Then mark off on it a distance corresponding to the proportion that is spent for school expenses and also for the other larger items of expense.
 3. What officials in your county find out the value of the property that each person has?
 4. How do they find out how much money will be needed for local public expenses? How do they find out how much the taxes per thousand must be?
 5. Sometimes the people of the community are asked to vote on the question whether they will tax themselves for certain public improvements or will borrow money for such improvements. Find out about such a case in your community where such a vote was taken.
 6. People frequently object to paying taxes. What would you say to a person who objected to paying taxes in order to explain to him the necessity of taxes.
 7. Who decides the way in which the income of a community shall be expended?

Besides this, perhaps you know of a road that is called a State road and of State schools such as a State university or a State normal school, and of other institutions such as State insane asylums and penitentiaries. You know also that there is a governor and various other State officials. You will see then that not all the taxes that your father and others pay are for the public expenses of your town or city. All taxpayers are interested also in having the money of the county and of the State spent wisely, so that they will not have to pay any higher taxes than is necessary.

Find out all you can about what the county and the State in which you live do for the people and also find out whether they need and spend as much money as your town or city.

NATIONAL EXPENSES.

Even yet we have not finished our study of public expenses. You have letters and magazines brought to your house from distant places and perhaps there is in your city a Government building where many people sort the mail and others collect what is called internal revenue. You have also seen soldiers and sailors and perhaps cannon and battleships. It is public money which pays the soldiers and sailors and buys the cannon and battleships, but you will not find "national tax" on your father's tax receipt. None of the taxes he pays to the town or county collector of taxes are used for such expenses. Everybody, however, is helping to pay the expenses of our Government. When you buy a stamp you are helping directly to pay for post offices and the carrying of letters. When you buy certain things that have been brought here from other countries you are helping indirectly to pay the

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1. Find out what changes have taken place in the rate of taxation in your community in recent years.
 2. Compare the expenses and taxation rate in your own community with those of another community of about the same size and see what items are higher or lower at home and abroad.
 3. Why should certain expenses belong to the county while others belong to the town?
 4. Answer the same kind of question with regard to the State and the county.
 5. What does the National Government do directly for your community besides handling the mail?
 6. Find out what the duty is on some common articles which you use in your home.
 7. If your town needs a new post office who provides the building?

expenses of our National Government. The one who brought the goods into the country had to pay a certain amount of money, called duty, at the custom house. When he sells the goods he includes in the price what he had to pay in the way of duty. Importers have to pay duty on coffee, silk, and many other common articles. When you buy any of these articles it is just the same as if you paid the Government a part of what you spend for them.

People who use tobacco and liquor pay more for them because those who manufacture and sell them have to pay a special tax, called the internal revenue tax. The National Government also taxes incomes. Any married person who earns more than \$2,000 a year must pay an income tax, and single men and women must pay if they earn more than \$1,000 a year.

Since the war, the expenses of the National Government have become more than a dozen times as great. This made it necessary for Congress to pass a law taxing a great many things that are not usually taxed. Find out some of the things that have been taxed to help pay for the war. Explain why it costs more to send letters than it did a year ago.

With the money raised by the new taxes the Government will be able to buy clothes, food, and guns for its soldiers and will be able to build ships and airplanes, but it will not have enough money for everything the country needs in war time. The Government has therefore been selling bonds to get more money. After the war everybody will have to keep on paying extra taxes for a long while, in order that the Government may have money enough to pay the bonds when they are due.

HOW THE GOVERNMENT GETS MONEY.

People sometimes have the idea that all the Government has to do when it needs money is to print more paper money or coin more

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1. What difference does the war make about living according to such budgets as those given. Compare increase in wages with increase in cost of living.
 2. What additional expenses does the Government have besides those connected directly with the Army and Navy?
 3. What is a Liberty Loan Bond?
 4. What is a War Savings Certificate?
 5. Find out if you can how much the Government is spending during its first year in the war.
 6. The great demand of the Government for war supplies has put a stop to the erection of buildings. Why should this be so?
 7. Mention some of the other ways in which the war affects business.

coins. The fact is that the Government can not safely make money in that way. In earlier times governments have tried to meet the expenses of war by issuing paper money and have found that in the long run the dollar bills have to be paid for, or redeemed as it is called. Sometimes governments have tried making coins which are under weight, but these finally are refused by traders. The result is that prices go up and the bad coin, like the paper money, has to be paid for in full. The only way a government can safely get money is by taxing its citizens. When there is a war, people have to make sacrifices in order to pay higher taxes and help win the war.

In this country, where the people elect their representatives, it is really the people who tax themselves, for the people through their representatives make the laws in regard to taxes. There have been times in the history of the world when a conquering nation has taxed the nation which it defeated in war. One of the criticisms of Germany in this war is that huge taxes have been levied on Belgium and Servia. These taxes were means adopted by the German Government for getting money to support its armies. There have been times, too, when some greedy king has taxed his subjects in order to increase his own wealth. Those times are fortunately past in democratic countries like our own. In our country taxes are the payments which people make to the Government for the protection which the Government supplies and for the services which the Government renders in making community life possible. People sometimes object to paying taxes when they are due, but when they remember what the Government does for them they will be willing to do their share in supporting it.

1. During the Revolutionary War colonial paper money was much reduced in purchasing power. What does this mean?

2. The same result appeared during the Civil War with the paper money of both the Northern and the Southern States.

3. Germany has removed much of the machinery of manufacturing establishments in Belgium. Can you show that this is the worst possible form of taxation?

4. Modern civilization does not permit slavery. In former times slavery was the common method by which a conqueror added to his wealth from the conquered country. Why is slavery a bad form of taxation?

5. England, France, and the United States have joined in the demand that Germany restore to Belgium what has been taken away. Show the justice of this demand.

MONEY IN THE HOME.

Just as in the community there are public expenses, so in the home there are family expenses and each member of the family also has certain individual expenses. If you buy a top, that is an individual expense; but if you buy a loaf of bread, that is a family expense. The cost of a place in which to live is always a family expense. The amount of this expense is often what is paid for rent. If your parents own the house, then the interest on the money paid for the house and the money for fire insurance, repairs, and taxes together make up the total expense. Find out as nearly as you can how much it costs your family for a place to live. Heat and light are family expenses. Think of as many others as you can. Clothing may be counted as family expense unless each member of the family has money of his own to spend for that purpose. Arrange under different heads, such as food, clothing, culture or improvement, church and charities, vacations and extras, savings, including life insurance, all family expenses, and estimate how much they are in your home. Study the facts at home without trying to report them at school. While public expense is a matter which everybody has a right to know about, family expenses are private matters. They should be studied and understood, even if they are private matters. The wise housekeeper is one who goes over the family expenses carefully and tries to plan for the future and for the wisest distribution of the family income.

WAR-TIME FINANCE.

The problem of meeting family expenses has become a difficult one in many homes since the war began, because the scarcity of many articles has resulted in a great increase in prices. A little inquiry will show how much the prices of various kinds of food and clothing have increased.

1. From some real estate agent find out what rate of rental is paid for dwellings in your community.

2. Why does a man take out fire insurance on his house?

3. If each member of a family of five wasted at every meal a slice of bread equal to about one-tenth of a loaf, how many dollars worth of bread would be wasted in a year? In what ways may family expenses be made less by using wisely all that is bought? If expenses are to be cut down, what portions of family expenses could be made smaller? If they should and can be increased, what portions would best be made larger?

The family often finds that it must choose between the different things which it wants. Some wise people, at the beginning of the year, make up what is called a family budget—that is, they decide how much money they shall spend for food, clothes, etc., for the whole year.

FAMILY BUDGET.

Study the following list of expenses of two families of different sizes and different incomes. Make up your mind whether the expenses are wisely arranged. After doing this, make out budgets for these families, showing just how you think the money should be spent for the different classes of things you have on your list. Also prepare to give your reasons for the new arrangement which you think is wiser.

Two budgets, one for a family of five members with an income of \$800 a year, the other for a family of six with an income of \$1,240 a year, are given below.

Budget for families of five and six members.

| Items. | Five persons. | Six persons. |
|---|---------------|--------------|
| Food..... | \$290 | \$530 |
| Rent..... | 65 | 120 |
| Clothing..... | 160 | 205 |
| Fuel and light..... | 50 | 70 |
| Tobacco and other luxuries..... | 15 | 25 |
| Medicine, dentist and doctor bills..... | 100 | 15 |
| Insurance, savings, and society dues..... | 35 | 50 |
| Church and benevolences..... | 5 | 5 |
| Reading matter and other culture..... | 10 | 10 |
| Amusements..... | 15 | 100 |
| Household utensils and repairs..... | 40 | 40 |
| Miscellaneous..... | 15 | 20 |
| Laundry and help..... | 0 | 50 |
| Total..... | 800 | 1,240 |

1. "Children usually have very little experience in earning money, and, therefore, know very little about its value." Explain the reason why one knows more about the value of money after he has earned it.

2. A family makes a large investment in its children when it feeds them and clothes them and educates them. Estimate the cost of bringing up a child during its first 18 years.

3. What duties rest upon a child who has been supported during the early years of his life by his parents?

4. What does the community invest in a child by giving him a free education?

INDIVIDUAL MONEY.

Personal expenditures are sometimes difficult to separate from the family expenditures. The food and clothing of a single person are usually part of the whole family budget. Children are sometimes ignorant of the facts about what their expenses are, because the parents provide fully for them. This is all the more reason why there should be a study of the matter. Again, the school can not go into your private matters, but you can very properly find out what the expense is of your clothing, your books and school supplies, and your food.

Sometimes we distinguish between the cost of food and clothing and the purely personal expenditures, which are for the little things bought by a person from day to day. In order to study this latter kind of expense, make a personal or individual budget, showing how you think a boy or girl should spend his or her money, supposing that it amounts to 50 cents a week. Make budgets also for boys or girls who receive one-half as much or twice or four times as much. Be sure that the separate items when added equal the total amount the boy or girl is supposed to have in each case. Have these budgets ready to be reported on in school, and be prepared to tell why some of your items are not larger and others smaller than you have marked them.

These budgets could be used to show how business budgets are made up. How much does it cost to conduct a store or a factory? In all cases where expenditure is wise it is carefully planned. Through such wise planning one comes to understand the value of money and how it should be used.

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The best material for reference in connection with this lesson is to be found in reports of the city or town in which the pupil lives.

Chapter VII.

CONCENTRATION OF POPULATION, INDUSTRIES, AND INSTITUTIONS.

One of the lessons that men of the present generation have learned, and learned to apply, is that the big things are the best and the cheapest. The constant tendency, therefore, is to enlarge the "unit" as much as possible in every line of business and in every industry.

Locomotives are made as big as the railroad tracks and bridges will stand, for one engineer can drive a powerful engine as well as a small one, and in proportion to the amount of fuel used the big engines can haul greater loads than the little ones. Steamships are made as big as the depth of the harbors and certain other limitations will permit, because they are safer and steadier at sea and are more profitable in operation than small ships with the same total capacity. Immense factories are built because they make it easier to subdivide the work of manufacturing, easier to use and distribute power for running the machines, and more convenient for the superintendents and foremen who direct the work. Great industrial corporations are formed by combining many smaller ones because goods can be produced more cheaply on a large scale under a single management which controls all the steps that are needed to produce finished manufactured articles. Railroads have been combined into great systems that extend halfway across the continent, and recently they have all been brought together under the control of a single Government officer because the concentration in management makes their operation cheaper and more efficient.

Schools are consolidated because the pupils may be graded better when they are in large numbers, teachers may have classes of better size, better equipment and buildings may be provided, and the supervision may be improved. Even in giving aid to the needy, it has been found that charitable associations can do better by working through a central organization because in this way it is easier to prevent unworthy people from getting more help than they ought to have, it is easier to find the families that ought to be helped, and fewer directing officers are needed.

This chapter is devoted to illustrations of the tendency to concentration.

LESSON C-25. A SEAPORT AS A CENTER OF CONCENTRATION OF POPULATION AND WEALTH.

By J. PAUL GOODE, professor of geography, University of Chicago.

People have been building towns and cities in recent years more than ever before in the history of the world. The community life of America has been changing from that of sparsely settled regions to that of populous cities. Men and women come together in cities because they can get work in factories, in stores, and other industries. They come, too, because there are more kinds of entertainment in a city than in the rural districts; there are also very often superior opportunities for educating the children of the family. Such motives as these we sometimes describe as the social motives for the concentration of population. People like to be where they can mingle with other people and where they

can enjoy the advantages which come from working and living in great numbers.

PORTS AS CENTERS OF CONCENTRATION.

Ocean shipping is one kind of business interest which has led to the development of great cities. Of the 15 largest cities in the modern world 10 owe their greatness chiefly to the fact that they are seaports in favorable locations. A port, as its name implies, is a gateway. On one side the highway of the sea opens out to all the world; on the other side, the land routes focus in upon the gateway. Through the gateway pass the products of many lands, moving back and forth in order to distribute what the world has and what men want.

The port can not grow except as trade passes through it. The region back of the port, for which it is the commercial focus, is called the "hinterland" of the port. A port city becomes great just in proportion as the hinterland is great and just in the measure that a large and active population in the hinterland produces the commodities of commerce beyond its own needs, and thereby is able to buy from other regions the food and other supplies which it requires and does not in sufficient measure produce. Every city is a place where goods are divided up and where some change is made in the goods before they are sent on. Especially is this true in a trading center and above all in a harbor city, for here the seagoing ship gives up its load to the wagon, the railway car, the canal and river boat, and the small vessel engaged in coastwise trade.

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1. Make a list of all the advantages you can think of that come to people from living together in cities.
 2. What are the disadvantages?
 3. During the war the difficulties in regard to fuel and food supplies have been more noticeable in cities than in the country districts. Explain why this is so.
 4. Select five of the largest cities of the United States and explain the reasons why people came together in these cities in such large numbers.
 5. Explain the reason why the city or town in which you live is located where it is.
 6. In your school a great many pupils are brought together in the same building. What is the advantage of conducting the school in this way? Can you think of advantages that would come from reducing or increasing the number of pupils in your school?
 7. Other social institutions besides the school are made up of large numbers of people, as, for example, the church or an association. Show what advantages come from the organization of people in this way.

NEW YORK CITY.

New York City is the best example we can find of a city which has grown up around a harbor. On the basis of population alone, it is now the world's greatest city. In 1917 greater New York, on the east side of the Hudson River, had a population of five and a quarter million inhabitants. But if the adjacent towns in New Jersey are counted in, as they should be, the great industrial and commercial city, or group of cities located on the bay, shows a total population of 7,500,000 inhabitants, which is some thousands more than there are in London, the metropolis of Europe.

• AN EXCELLENT HARBOR.

The harbor which made New York so great is one of the best on earth. The anchorage extends inland 15 to 20 miles from the open sea, giving the best of protection from wind and wave. The tidal range is low, the change in level of the water being only $4\frac{1}{2}$ feet. The anchorage is roomy enough to hold great numbers of large vessels. It has space for all the navies of the world at once. The channel into the harbor is wide and direct, and 40 feet in depth at low tide, so the largest ships afloat may enter or leave at any hour. The channel is not seriously troubled by shifting sands; nor is the port ever closed by ice. This is a list of advantages not matched by any other port on our coasts, and perhaps not in all the world.

A century ago New York was only one of a number of important ports on our Atlantic seaboard, being on a par with Boston, Philadelphia, Baltimore, and Charleston. In those days a channel

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1. Explain the reasons why the five great cities of the world which are not seaports are located where they are.
 2. What are some of the leading trade routes of the world other than those that come to the United States?
 3. What is the reason for the greater development of trade on the Atlantic coast of the United States as contrasted with the Pacific coast?
 4. What effect does the Panama Canal have on trade routes to the United States?
 5. In settling a new country people usually follow the courses of rivers. Why is this so?
 6. Mention some harbor which, in contrast to that of New York, is seriously affected by tides.
 7. Mention the estuaries of some great rivers which in contrast with the Hudson River estuary do not make good harbors, and explain the reason why.

entering a harbor was good enough if it was 10 feet deep and many harbors were considered first class. But since ships have come to be made of iron and steel, they have grown so large that New York alone has been able to meet the first-class requirements.

RELATION TO EUROPE.

During the century just past, the center of the world's commerce has developed on the coast of west central Europe. The old and stable populations of western Europe had manufactures to sell, and the products of factories came from such ports as Liverpool and London. Our new land had a wealth of raw materials to dispose of, such as cotton, lumber, copper, hides, wheat, and meat. So trade waxed great on the route of the north Atlantic, and this route has become far and away the greatest highway of commerce the world has ever known. For this reason the movement of traffic in America has been largely on east-west lines, and our northeastern seaports have grown apace.

OUTSTRIPS ALL COMPETITORS BECAUSE OF RELATIONS TO THE COUNTRY.

A century ago Philadelphia was the metropolis of the New World, with Boston and New York close seconds. But Philadelphia lost her lead to New York, with the opening of the Erie Canal, and since then New York has outrun all other ports, and for years has held the highest record in traffic movement. We shall be able to understand this shift to New York if we consider the routes of shipment which radiate from New York to the country back from the coast.

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1. Get a description which shows the difference in size of ships 100 years ago and at the present time.
 2. When was the steamship invented and under what conditions?
 3. What changes in industry made it possible to build steel and iron ships, and when did these changes come about?
 4. Make a sketch of the harbor of Philadelphia and decide from this sketch whether the harbor is as accessible to ocean boats as the other great harbors on the eastern coast of the United States. Do the same for Halifax and for one or more of the harbors in the Southern States.
 5. Make a map of the Atlantic Ocean and show what advantages northern ports have over southern ports in the matter of distance which European shipping has to travel in the two cases.
 6. When was the Erie Canal built?
 7. What other great canals have influenced the trade routes of the world?
 8. What changes have taken place in the methods of carrying boats through canals?

As we have noticed, a harbor may become a port and a port city grow great only as its hinterland permits. Let us look into the advantage of position of New York in the service of its great hinterland. And here an inquiry discloses that the part of America which has furnished the lion's share of freight to be moved is the northeastern quarter of our country. In this area lie the great coal fields, producing nearly nine-tenths of all our coal. Here also are the iron deposits with nine-tenths of all our iron. Iron and coal are the bone and sinew of a tremendous manufacturing industry, responsible for the growth of hundreds of rich cities, whose people have a very large wealth-producing power, and hence a large buying power. In this quarter of our country also was the greatest of our forests, and though now these forests are largely destroyed, in their place are the richest of all farming lands—the great wheat fields with their millions of bushels of wheat for export; the areas of oats and hay, worth a billion dollars a year; the "corn belt," with a crop worth nearly \$2,000,000,000 a year at the farm, and with its tremendous derived values in hogs and cattle, running into billions of dollars. The bulk of foreign commerce growing out of this wealth goes out of, or comes in through, some one of the four great seaports on our northeastern coast. On this traffic our port cities grow great. Which one has the greatest advantages?

If you will get your atlas and turn to a physical map of our country, you will discover which port is favored by geographic influences—which port has the advantages which will make it greatest. All along the Atlantic margin of the country runs the Appalachian highland, with its series of long ridges trending par-

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1. What conditions led to the growth of population around the Pittsburgh region?
 2. Why did the northern part of the United States fill up with settlers more rapidly than the southern part?
 3. Crossing the northern part of the United States from east to west, indicate for each section of the country the chief products and indicate also the directions in which these products must move to their markets.
 4. What are the chief products of the Southern States? Indicate in this case also the direction in which these goods must be carried to their markets.
 5. What are the chief commodities which we import from Japan and China? By what routes do they reach the people that use them in the eastern part of the United States?
 6. In colonial times there was some trade with oriental countries. How was this trade carried on?

allel with the coast, and standing like great stone walls against the establishment of east-west lines of travel. Only here and there are there passes across these ridges, making highways possible. The centers of great freight movement from the middle plain are such cities as St. Louis, Kansas City, Minneapolis, and St. Paul, Cleveland, Cincinnati, and especially Chicago. The goal of the major part of the out-freight of our country is west central Europe. The straight-line route for the freight bound for Europe from the northeastern quarter of our country is to Boston. But no great flow of traffic has grown up at Boston. The seaport closest in number of miles to Chicago is Baltimore, but this port has not grown great; neither has Philadelphia attained eminence as a port. And the reason is plain. The three ports named have the great handicap of the Appalachian mountain ridges between them and the hinterland they might serve so well. The freight from the corn belt, which is also the coal and iron belt, and hence the manufacturing belt, en route to the sea at Baltimore or Philadelphia, must climb the Appalachian highland, or tunnel its ridges, and follow with expensive construction its winding canyons. When the freight on the way to Boston has gone from Chicago to Albany across the open plain, it must climb a mountain ridge and drop down almost to sea level at the Connecticut River, then climb another highland and drop down to Boston. But at Albany, only 90 feet above the sea, all this freight may have a very direct and almost absolutely level roadway down the Hudson River to the port of New York.

1. Draw a diagram showing the different land elevations from the Pacific to the Atlantic across the northern part of the United States. Do the same for the southern part of the United States.

2. What are the great desert areas of the United States? Explain why these areas interfere with migration.

3. Measure on a map the straight-line distances between Chicago and the different ports of the United States. Indicate in each case the main obstructions to travel that cross the lines.

4. New Orleans has frequently been described as the most natural port for the Mississippi Valley. What reasons can you give for this statement and what reasons can you discover which prevent that port from exceeding New York in its handling of freight?

5. Make a diagram showing the changes in elevation referred to in the text between Chicago and Boston.

6. The Hoosac tunnel was regarded, when it was built, as likely to be of great importance in developing commerce between New England and the West. Find out about this tunnel and also show the importance of tunnels in railway construction.

OPEN ROUTE TO WESTERN FREIGHT.

Here lies the tremendous advantage of the port of New York. There is no Appalachian barrier between this favored port and the richest of all hinterlands at the west. The Hudson River is practically an estuary up to Troy, and its large western tributary, the Mohawk River, lies in a trough between the Adirondacks at the north and the major part of the Appalachian highland at the south. This "Mohawk pass" has brought supremacy to the port of New York. To add to this good fortune the great highway through this pass opens at Buffalo directly upon the upper Great Lakes, and these fresh seas provide deep-water transportation to the very heart of the continent at Duluth and Chicago. When the Erie Canal was made, these Great Lakes added their influence of low freight rates by an all-water route, on the commodities moving to the eastern seaboard, and gave this great advantage also to New York City. To compete with the cheap water rates, railways strove to reduce costs and to cheapen rates, again in favor of New York. Then the merchants, to gain these low rates, concentrated their traffic over these routes, and new railways were built to compete for the growing business in freights, always in favor of New York. Then, also, on the sea the ship-owners have preferred the port of New York, because freight is to be found there in great abundance. This makes it easy to secure cargoes for return freights. Shipowners therefore competed with each other and gave the port of New York the prize of lower ocean rates.

ADVANTAGES ACCUMULATE.

And so the influences run on, like the sequence in the "House that Jack Built," always with the advantage to New York. The

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1. What were the earliest railroad routes in the United States?
 2. What are some of the types of manufacturing industry which center in and about New York City?
 3. Why have immigrants come to the United States in years past from Europe?
 4. What effect has the war had on immigration?
 5. What is the effect of the changes in immigration on the prices of manufactured goods in the United States?
 6. In making payments to apply in other cities one sometimes secures a New York draft. What is a New York draft and why is it better than a draft on some bank in another city?
 7. Why is the stock exchange on Wall Street so frequently quoted in connection with the financial condition of the country?

improved railway service at this great center also brought plentiful supplies of cheap fuel and raw materials. The ships on the sea, carrying over half of all the foreign trade of America to and from the port of New York, brought cheap raw materials and also millions of immigrants, making labor cheap and plentiful. For these reasons the city became preeminent as an industrial center, the leading manufacturing city of the New World. This in turn created a call for capital to invest in machines and transportation systems and buildings. Thus through all the types of business activity New York prospered. In addition to carrying on great merchandising operations, New York City became a great banking center and is to-day the money market of the world.

It is well worth noticing that in all this chain of causes and effects the age-old principle is again demonstrated: "To him that hath shall be given." It is because New York has a fine harbor, and an easy pass through the highland barrier at the west, opening to the great, productive, central plain; and because the Great Lakes added to this an influence of cheap water transportation leading directly to New York; and because the port was on the great highway to the markets of western Europe; and because the country has been developing in an era of predominantly east-west moving commerce, that New York has grown great. It is for all these reasons that this favored city has become the world's largest center of population, the largest manufacturing center in America, the greatest shipping port in the world, the leading commercial city of America, and the banking and money center of the western world and, to-day, of the whole world.

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LESSON C-26. CHARITY IN THE COMMUNITY.¹

One lesson which modern society is learning is that misfortune to one of its members is a matter of concern to the whole community. We can never have true community life except where there is sympathy between its members. This is especially true in our own country, where our democratic ideal includes sympathy and equal opportunities for all.

THE NEED FOR CHARITY.

In many of our cities and towns this spirit of democracy expresses itself in the form of charitable associations organized to help those who are, for any reason, in misfortune. It is important that we should understand how frequent and how urgent are the demands for charitable assistance, even in our prosperous and democratic Republic.

In the Old World we know that great poverty and destitution have always existed. In many cities of Europe, as you walk along the narrow streets or enter the doors of one of the great cathedrals, beggars in rags stretch out their hands and ask for coppers. But in our New World we like to think that things are different. It is a part of what has been called the "promise of American life" that everyone should have an opportunity to make a decent living for himself and his family. Before the great war more than 1,000,000 of the poor people of Europe came to the United States every year. During the 10 years preceding the war more than 10,000,000 immigrants came, because they thought life in America promised them a better living and a better education for their children. They hoped for more work and better wages; they wanted less unemployment, poverty, and misery.

EXTENT OF CHARITY.

Nevertheless, there are many people, even here in America, who can not support themselves. In the year 1915, in a single large American city, 100,285 persons were helped by one great charitable society, and during the same year in the same city 80,181 persons received aid from the public agency for assisting the poor. Moreover, in addition to the help given by these two agencies,

¹ This lesson was prepared by Edith Abbott, Chicago School of Civics and Philanthropy. One of the most striking facts about modern community organization is that it is full of sympathy. Cities are more careful to-day than ever before to help all the members of the community, especially in times of misfortune. This lesson gives examples of community sympathy.

one private and one public, scores of other relief societies representing Jewish, Catholic, and Protestant churches, and other special private charities also gave aid to the poor of the same city. Why are these thousands of people poor? Are they unwilling to work? Are they unfortunate? Why are they unable to live the normal life of independence and self-support?

THE NORMAL FAMILY.

The normal family in America, as elsewhere, is supported by the earnings of the father. If the father is well and strong he can earn enough money to provide for the family needs—to buy the food and clothing, to pay the rent, and perhaps to buy a home. Of course, such a family will never need to ask for charity. But suppose the father becomes ill or meets with an accident, or suppose that a great industrial depression closes temporarily the factories and workshops, and the fathers of hundreds of thousands of families are no longer able to find work. What happens at such times can best be illustrated by the history of a few “charity families.”

DESTITUTION FROM BUSINESS DEPRESSION.

Take, for example, the story of a family that we shall call the Wheeler family, although, of course, this is not the family's real name. Mr. Wheeler had been earning very good wages, for he was a skilled mechanic, but quite suddenly in the wake of the industrial depression of 1914-15 he found himself out of a job.

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1. Explain some of the reasons why there is likely to be less destitution in a new country than in an old country.
 2. Is it wise to give to beggars?
 3. Give five different reasons for the immigration of the millions of men and women.
 4. Our first immigrants in America were the settlers of Virginia and of Massachusetts. Why did these first immigrants come?
 5. Look at the Immigration Chart published each year in the Annual Report of the Commissioner General of Immigration and see the different “waves” of immigration. Explain the Irish wave, 1845-1855; the German wave, 1848-1858; the Russian wave, 1885-1915; the Italian wave, 1895-1915; the Austrian wave, 1900-1914; the Balkan wave, 1905-1915.
 6. Show why charity is more likely to be required in the city than it is in a country district.
 7. Why have churches always been active in providing charity for poor people?

He tried in vain to find work in order to support his wife and four small children. Every day he walked long distances from one factory to another, but came home at night completely discouraged. Employers were everywhere "laying off" their men. When his savings were gone the neighboring shopkeepers gave him credit, for they knew he was honest and that some time he would pay. But he finally had to sell his furniture, give up his home, and move his family into a furnished room in a very poor district of the city. Mr. Wheeler was willing to do any kind of work if he could not get work in his own trade. Although he got an occasional odd job, there were so many thousands of unemployed men in his city that there were not enough odd jobs to go around. He could not let his wife and children suffer from hunger and cold, though he could freeze and starve himself, and finally he pocketed his pride and went to a charitable society for help. This society sent a visitor to the home, who found the family in great need. The society at once sent them coal and food and found work for Mr. Wheeler, but it was unskilled work with a wage of \$12 a week. This was much less than he had earned at his own trade. However, he knew that if he could struggle along until industry revived he would get back to his old place or to another that was just as good. This is the story

1. What is a labor exchange or State employment bureau? Explain how such an agency may help to prevent poverty and distress.
2. In England the Central Government has established a series of public labor exchanges with a network of branches all over the country but with central control at London. Explain why this English system is better than an American system of free employment offices established for each State independently but without Federal organization and control.
3. Why was it better for the charitable society to send a visitor to Mr. Wheeler's home than to give money to Mr. Wheeler?
4. How was it possible for the charitable society to find even an "unskilled" job for Mr. Wheeler when he could not find anything for himself? Does this show how a good "labor exchange" might help?
5. What is meant by "insurance against unemployment"? If possible, find out about the English method of providing unemployment insurance and see how it would help families like the Wheeler family.
6. Unemployment is more likely to appear at certain times in the year than at others. Why should this be so, and at what periods would you expect the greatest amount of unemployment?
7. Cities and States sometimes provide for unemployment by making public improvements, such as building roads. Can you see the advantages of a plan of this sort?

of why the Wheeler family had to ask for charity, and charity was needed in 1914 and in the early part of 1915 all over the country to give temporary help to thousands of unemployed families like the Wheeler family. In New York City, according to the estimate of the United States Bureau of Labor Statistics, more than 400,000 men were unemployed in the month of December, 1914. Some of these men had savings that tided them over, but the vast majority were men who had worked for such very low wages that they either had been unable to save anything or had been able to save only a very little—not enough to carry them through the period of depression.

DESTITUTION FROM ILLNESS.

Destitution also comes to a large number of American families because of illness. Take, for example, the story of a family that we shall call the Swanson family. Mr Swanson was a blacksmith, and a very good blacksmith too. He worked steadily in a large foundry and supported his wife and three children in a comfortable, pleasant little home. But the foundry in which this good blacksmith worked was a very dark and dirty workplace, and he began to have a bad cough, which became so troublesome that he finally went to a doctor for some medicine. The doctor, instead of giving him medicine, examined the man very carefully and told him that he had tuberculosis. He told the blacksmith that he

1. Some of our States have laws which require all employers to keep their workshops and factories clean and sanitary and safe, so that they will not be dangerous to the health or life of the men who work in them. Has your State such a law? Why is it important for every State to have such a law?

2. Has your city a municipal tuberculosis sanitarium where consumptive poor people are given free care? Why is a city justified in spending the taxpayers' money for such an institution?

3. Write to the American Association for Labor Legislation, 131 East Twenty-third Street, New York City, and ask for a copy of the proposed law to provide for a compulsory health insurance in our American States. England has compulsory health insurance and so have many European States. How would national health insurance help to prevent poverty and destitution?

4. One device commonly adopted to protect families against the dangers referred to in the text is for the father to take out insurance with an insurance company. How is it possible for an insurance company to provide more protection for the family than the man can without the help of the insurance company?

must stop working and go to a sanitarium and stay there a long time, probably a year, because he would never get well in any other way. The poor blacksmith was in despair. He had saved a little money, but it would not support his wife and three children for many weeks, and how were they to live for a whole year if he went to a sanitarium? He said that he would have to go on working even if he died over the forge. But what would become of his family after he was dead? The doctor was a kind and resourceful man, and he said to the blacksmith: "I can get you a free bed in a sanitarium within the next three weeks, and I will write a report about your wife and children to a charitable society which will pension your family while you are away and will help you find lighter work out of doors when you leave the sanitarium. You must never go back to work over your forge in that unhealthful place." There are hundreds of thousands of families in cities just like the Swanson family, in need of charitable help because the father is sick with tuberculosis or heart disease or rheumatism or some other serious disease which makes it impossible for him to work and to earn money for his family.

DESTITUTION BECAUSE OF DEATH OF THE WAGE EARNER.

There are other ways in which families become dependent. One of the most frequent causes of dependency is the death of the wage earner. There is, for example, the family that we shall call the Guardini family. Mr. Guardini was an Italian who worked in a large iron and steel plant. He went to night school and learned to speak English and to read and write. In Italy he had

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1. What is a workmen's compensation law? Have you such a law in your State? How would such a law help a widow like Mrs. Guardini?
 2. Have you a widows' pension law in your State? How would such a law help a widow like Mrs. Guardini?
 3. Do you think the Guardini children will grow up to be better citizens if they stay in their own home with their own mother than they would if they were sent to an orphan asylum?
 4. How does a good child labor law prevent poverty? Have you a child labor law in your State?
 5. How does a compulsory education law help to prevent poverty?
 6. Point out some of the reasons why it was not possible for the small boy in the Italian family to keep his position in the news stand.
 7. Why did the woman in the same story try to start a candy store rather than some other kind of a store?
 8. What advice would you give to someone in like circumstances about investing money in a small candy store?

never had a chance to go to school, and when he came to America, a strong young man 19 years old, he could not even write his name. He knew there were good free schools in America, and that was one reason for his coming here. When he learned that there was an evening technical school in the city where he worked, he went to that school four evenings a week even when he was very tired from working all day. In this way he became a skilled workman earning good wages. Then he married a nice Italian girl. They had five little children, and Mr. Guardini and his wife planned very carefully to keep the children well, to send them to school neatly dressed, and to lay up a little money every month to take care of them in case of sickness or a temporary loss of his job.

One day a dreadful accident happened in the great industrial establishment where Mr. Guardini worked, and poor Mrs. Guardini was at home alone when her husband was brought in dead. Although this was a terrible shock to the poor mother, she had to face immediately the problem of how she was going to take care of her little brood of crying children. There was enough money saved to pay for the funeral expenses, and Mr. Guardini had some insurance from his trade-union. His wife knew they could live on this money for a year, but what was she to do when that was gone, for the eldest child, Nickie, was only 8 years old and the baby, Concetta, only 2 years old? Little Tony was only 4, and there were the twins, Pasquale and Fernando, aged 6. What could she do with all these little children if she went out to find work? A friend said, "When the money is gone, you will have to send the children to an orphans' home." Mrs. Guardini said she would never do that. So she thought she would use the money to start

1. Distinguish between the types of charity that are advocated in this lesson and the charity asked for by an ordinary tramp.
2. What charitable institutions does the community in which you live provide?
3. What is a "poor farm" and what relation does it have to the industrial efficiency of its inmates?
4. Many of our modern prisons have established schools in which they train men in industries. Can you see a relation between training for industry and the effort to prevent the development of crime?
5. What is the relation between crime and poverty?
6. Education tends to reduce both crime and poverty. Show some of the ways in which education brings about more satisfactory conditions.
7. In many cases charitable organizations relieve temporary difficulties in homes by making loans rather than by giving money outright. Why should the charitable organization make a loan rather than give money?

a little candy store, and Nickie could earn something helping an Italian neighbor at his news stand downtown. This plan did not succeed, however, because she lost the money she invested in the store and the news-stand man brought Nickie home one day, saying that he was too small to sell papers or to work at all. She was utterly at a loss to know where she would get food or how she would pay the rent during all the years that were to come before the children would be old enough to work. Hundreds of thousands of accidents like this happen every year, and comfortable little homes like that of the Guardini family would be broken up if the community failed to assume the responsibility of providing pensions for widows like Mrs. Guardini until the children are old enough to help.

SUMMARY OF CAUSES OF DESTITUTION.

The stories of these three families illustrate the three great causes of destitution in the United States—unemployment, sickness, and the premature death, whether by accident or through illness, of the wage earner upon whose labor a family is depending for its support. Every community should set itself to thinking about what can be done to prevent unemployment, sickness, and premature death, and thus prevent misery and destitution.

NEED OF COMMUNITY ORGANIZATION TO PREVENT DESTITUTION.

It is clear that a farming community is subject to fewer hazards than an industrial community. It is this fact which makes this whole discussion particularly appropriate in connection with the story of the growth of great cities and great industries. Unless the dangers of concentration, as well as its advantages, are clearly

1. Review once more the conditions which bring people to a great center of population for the sake of finding employment.
2. Show how specialization of industry sometimes operates to interfere with the hopes of those who have come to a city seeking employment.
3. When one is planning for the occupation which one will enter, what are some of the questions that he ought to ask himself about the probability of continuous employment in that industry?
4. Various types of saving can be recommended in order to prevent destitution. What are some of the safest kinds of saving?
5. Why should a community encourage individual people to save?
6. It has been said by those who are pushing the campaign for war savings that the advantage to the country of a lesson in thrift will be the largest advantage from the war savings campaign. Explain what is meant by this statement.

understood, people will suffer new dangers and difficulties which will more than offset the increased productiveness of the city population.

Therefore, it is in some of our great industrial States that steps have already been taken to prevent the destitution that may so easily accompany modern industry. Such States have established free employment bureaus to help men find jobs quickly, so that they will not waste their time wandering about in a fruitless search for work. Rigorous State laws have been enacted to make our great industrial plants safe places in which to work, because it is easier to prevent industrial disasters and mining accidents than it is to provide for widows and their children after such catastrophes have occurred. States and cities are also providing good free hospitals and dispensaries and sanatoria in order that wage earners may be kept in good health and able to support their families. It is cheaper to keep men alive and well than it is to provide charitable support for their families after they are killed or disabled, and we look forward to a time when all our States will have laws preventing unnecessary poverty and destitution. All this has been done, let it be remembered, not merely because society wants to save single individuals, but because it is coming to be understood that the social system itself is endangered by anything that affects unfavorably the life of the people who make up the community.

England has set us a very good example in this work of prevention. She has established within the past decade a national system of labor exchanges, national health insurance, national unemployment insurance, and a national minimum wage law. In many respects poor people are better off in America than in any other country in the world, and we can not afford to let England take the lead in this important matter of social legislation that will prevent poverty and destitution.

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LESSON C-27. EARLY TRANSPORTATION IN THE FAR WEST.¹

One day in the middle of May in the year 1848 the residents of the little town of San Francisco were drawn to the doors of their shops and homes by loud shouts. A strange man, holding high above his head a bottle containing a yellow substance, was walking down the street shouting: "Gold, gold, gold, from the American River!"

In March of that year the inhabitants of the village had heard of the discovery of gold by some workmen digging a mill race near Sutter's Fort, but no excitement had followed the report. Many did not believe the report, and practically none had left their homes to hunt for treasure. But, with the sight of the yellow metal, doubt vanished and people became wild with excitement.

THE RUSH TO THE DIGGINGS.

Immediately there began a rush to the diggings unequalled in history. Lawyers, merchants, engineers, farmers, blacksmiths, and doctors dropped their work; printers forsook their shops; sailors left their ships; soldiers deserted their colors. In a short time the town was almost deserted. Even some of the women sought the gold fields.

At the diggings fortunes were gained almost in a day: One man, with the help of some Indians, cleared a dollar a minute. Another found a gold nugget worth \$3,000. Others panned as much as \$5,000 a day. A 14-year-old boy, after less than two months' work, brought back over \$3,400. One young man wrote to his relatives in the East that he would return in a short time with \$500,000 in gold dust.

Through letters, newspapers, official reports, and the accounts of travelers the news of the new El Dorado spread like wildfire. From the Eastern States, from Oregon, Peru, Chili, Vancouver, Hawaii men came in multitudes. As report after report confirmed the story of the fabulous riches in California, men in every part of the world became mad with the desire to join in the hunt for gold.

DIFFICULTIES OF TRANSPORTATION.

How were they to get to the gold fields? That was the question. Migrating people always follow a road or a waterway. Between

¹ This lesson was prepared by Howard C. Hill, instructor in history, University High School, University of Chicago. Transportation is necessary to the development and maintenance of any community. The example given in this lesson shows the great difficulty of developing adequate systems of transportation when the concentration of population comes suddenly.

California and the East there was no satisfactory road. On the other hand, never in the history of the world had there been so many people eager to reach an unsettled land. People in the Eastern States tried every possible kind of transportation. In the fall of 1848, those who were able to secure supplies and passage embarked on the rough, dangerous voyage around Cape Horn. Others went by ship to Panama and thence traveled in dugouts or in rude carts or on foot to the Pacific where for weeks, sometimes for months, they impatiently awaited a vessel bound for California, only to find too often that it was already overcrowded. Sometimes men fought like wild beasts to secure the few remaining places on board.

In the spring of 1849, thousands upon thousands started for California by the overland route. Many journeyed in large canvas-covered wagons drawn by mules or oxen. Others rode on horseback. Still others employed a pack train or two-wheeled carts. Some walked, carrying their possessions on their backs. Five Frenchmen pushed a handcart to the Pacific. One man is said to have trundled his goods in a wheelbarrow.

The journey was one which might well have dismayed the hardiest and most courageous. Over the Oregon trail as far as South Pass and southwest to California, the route extended over 2,000 miles. With the exception of four small trading posts and a few forts, not a single town, village, or house lessened its desolation. Over mile upon mile of barren plain with nothing to break the distressing monotony; across alkali deserts which filled the air with stifling dust; burned by the torrid rays of the summer sun or half frozen by chilling blasts in the mountain passes; attacked by bands of Indians or desperadoes; exposed to starvation, thirst, and disease, the gold-seekers pressed on.

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1. Who were the first settlers in California and what were the attractions that brought them to that region?
 2. The early history of California is intimately related to the history of Mexico. Find out something about the relations between these countries.
 3. Where is the American River where gold was first found?
 4. What are the different methods of securing gold? In answering this question find out what is meant by panning.
 5. Where are some of the other regions to which there has been a rush of people on the discovery of gold?
 6. What is the value of an ounce of gold? What amount of gold would be necessary at the present value of the metal to make up the quantities described in the text?
 7. Why is the word "El Dorado" used in describing California?

Thousands died on the way. Many perished of hunger, hardship, and Indian arrows. All sorts of articles littered the road—furniture, anvils, chisels, trunks, stoves, barrels, clothing, bacon, harness, beans. Bones of men and beasts dotted the trail for hundreds of miles. Those who lived to reach California found no sources of food adequate for their wants; no supplies of tools, clothing, and other articles sufficient for their needs.

HIGH COST OF COMMODITIES.

The rush of so many people to a region where the production of the necessities of life was insufficient, and where there were such inadequate means of transportation of supplies, increased enormously the prices of the few commodities at hand. Spades and shovels cost \$10 each. Flour sold for \$400 a barrel. Poor brown sugar brought \$4 a pound and a wooden bowl for gold washing cost \$16. A restaurant in San Francisco charged \$3 for a cup of coffee, a slice of ham, and two eggs. A newspaper, though a month old, brought a dollar. A shirt at one time sold for \$40.

If you bear in mind that practically all the men in California were gold miners and that almost everything they ate or wore or used had to be carried long distances in small ships or over poor roads at great expense, these prices will not seem exorbitant.

TRANSPORTATION NECESSARY TO COMMUNITY LIFE.

The story of the forty-niners—the people who went west in 1849—shows why means of transportation are needed when people gather in large numbers in any community. Under ordinary cir-

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1. Find out something about the military roads built by Rome and by other ancient peoples. Explain what a military road is and why it was necessary to build one.
 2. Early commerce first developed around the Mediterranean. Why does commerce develop extensively on the sea before it does on land?
 3. Much of the earlier commerce of the world was carried by caravans. What are some of these earlier caravan routes?
 4. Much of the early exploration of the seas was undertaken for the purpose of finding trade routes to India. Find some cases in which this was true.
 5. Find out about some of the early voyages around Cape Horn.
 6. What was the earliest route across the Isthmus of Panama?
 7. Get a description of the prairie schooner in which many of the prospectors crossed the continent.
 8. What other route besides the Oregon trail crosses the continent to California?

cumstances people can not live in regions where roads, canals, or other means of transportation do not exist. If they are farmers, they find it impossible to sell or exchange the crops they do not need for articles they do need. Unless there are adequate means of transportation, workers in the city find it impossible to exchange the results of their labor for food and other commodities. Ordinarily, roads and means of transportation limit the number of people who can go to any new part of the country.

Long before the discovery of gold some commerce had been carried on with California. The first transportation was upon the shoulders of men. At a very early date the Indians trained dogs as burden bearers. The early Spanish introduced the mule pack train from Europe. Such transportation usually cost a dollar a pound per hundred miles. In 1822 the first wagons crossed the plains.

As a result of the rush to the gold fields an enormous freight traffic grew up. Huge canvas-covered prairie schooners, drawn by from 6 to 12 oxen or mules and capable of carrying from two and a half to eight tons each, made their way slowly westward. These wagons were costly. One writer says that they cost from \$800 to \$1,500 each, mules from \$500 to \$1,000 a pair, harness for a 10-mule team \$300 to \$600, making a total cost of from \$3,600 to \$7,100 for a single outfit.

For protection from the Indians, usually not less than 25 prairie schooners traveled together. Such a caravan averaged from 12 to 20 miles a day. The trip to California ordinarily took from May to November.

1. The cost of transportation always enters into the cost of the things which one buys on the market. Mention three or four things which are expensive chiefly because of the cost of transportation.

2. Mention several things which are costly chiefly because of the material that enters into them.

3. During the war prices have risen in many cases. Explain the reasons for this.

4. The destruction of shipping is one of the important reasons why the prices of goods have changed during the war. Explain why this is so.

5. Mention several kinds of goods that come from other countries which have been especially affected by the war.

6. Are there any parts of the world to-day where the means of transportation are similar to those used in the early days of the Spanish settlements?

7. Why is a train of pack animals used before wagons?

8. Compare the prices of mules and harness given in the text with prices at the present time.

NEW DISCOVERIES OF GOLD.

The discovery of gold near Pike's Peak, in 1858, was followed by another wave of gold seekers. The western trade grew tremendously. During the sixties, 500 westward-bound prairie schooners passed Fort Kearney, Kans., in a single day. During 1865, over 10,000 tons of freight, requiring about 5,000 wagons, 6,000 mules, 28,000 oxen, and 1,300 teamsters, were carried west from Atchison alone, and freight was carried west from many other points as well. At one time a single firm employed over 6,000 wagons and 75,000 oxen.

Of course, under ordinary circumstances such a commerce could never have developed, for the people out of whose needs it grew would never have gone in large numbers to regions as remote as Colorado and California until proper means of transportation had been established. But their motive was not ordinary; they went to dig gold and silver, not to cultivate the soil.

EXPRESS SERVICES.

The slow-moving prairie schooner was not rapid enough for express, mails, and passengers. By 1858, therefore, we find swift stage coaches, capable of accommodating 11 passengers, 9 inside and 2 on the seat with the driver, making semiweekly trips across the continent. Teams were changed every 10 miles. By traveling night and day the trip from St. Louis to San Francisco could be made in a little over three weeks. The fare varied from \$100 to \$600. Meals, consisting of coffee, bacon, and hardtack were usually included. Letters were carried for 10 cents per half ounce.

1. How did the early transcontinental travelers get across the Mississippi River and at what points?
2. What cities of the present time are located at points where there were settlements on the old trails?
3. A number of these earlier settlements are called forts. Can you explain why this should be so?
4. Find some of the stories that have been written about trips across the continent and settlements in California and show what were the difficulties encountered in these early times.
5. In these stories it will frequently be found that committees of miners were appointed to keep order in the community. This indicates that Government without good means of communication is very difficult. Show why this would naturally be so.
6. The price of postage, as described in the text, is much higher than is necessary now to carry mail to any part of the world. Show how the mails depend on systems of transportation.

DISCOMFORTS AND DANGERS OF THE JOURNEY.

Passengers got what sleep they could sitting upright and hanging on to the straps. Through especially hostile districts a squad of soldiers in an Army ambulance commonly furnished protection, but as a rule driver and passengers were forced to rely on their own rifles. Every trip had its excitement—a blizzard, a brush with the Indians, an attack by robbers, a stampede of the mules, a serious breakdown or upset, trouble with drunken drivers.

Capt. Fiske thus describes his journey over the overland stage in 1863:

The stage line is wretchedly managed. The company undertakes to furnish travelers with meals (at a dollar a meal), but very frequently on arriving at a station there was nothing to eat. * * * On one occasion we fasted for 36 hours. The stages were sometimes in a miserable condition. We were put into a coach one night with only two boards left in the bottom. On remonstrating with the driver, we were told to hold on by the sides.

FAMOUS TRIPS.

Many stirring stories are connected with the western stagecoach. Among the most famous are those of Abe Majors. On one occasion, when Horace Greeley was his passenger, he covered the 665-mile trip from Leavenworth to Denver in six days. Bob Holladay, in order to establish a record for his line, drove, at a cost of \$20,000, from Placerville, Cal., to Atchison, Kans., a journey ordinarily requiring 17 days, in 12 days and 2 hours. Keno Armstrong once drove 610 miles in 110 hours without a moment's sleep.

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1. New regions into which settlers go are called frontiers. What are some of the characteristics of frontier life?
 2. Are there any frontiers in the United States at the present time?
 3. What effect is produced on a frontier when a regular line of transportation is established to that region?
 4. Are there frontiers in other parts of the world than in the United States?
 5. Why do countries establish colonies? A great deal is said during the present war about the colonial possessions of the different European powers. Of what importance is a colony to its mother country?
 6. Conditions somewhat like those in California are to be found today in Alaska. Get some information about that country and its recent development.
 7. Get information about the prices of things that are needed for life in Alaska.

PONY EXPRESS.

For important letters and dispatches even the swift-flying stage-coach was too slow. Accordingly, in 1859, Senator Gwin, a forty-niner, persuaded a company already running a stage line to Salt Lake City to establish a pony express to the Pacific. It was a serious undertaking to carry the mail over the plains, across the deserts, and through the mountains, but after some hesitation the company consented. They secured 500 fast horses, built 190 relay stations, employed 200 men to look after them, and carefully selected 80 of the best riders on the frontier.

Armed with only a knife and a revolver, the riders were allowed to carry nothing but absolute essentials. The two waterproof mail bags, locked by the Government, were securely strapped to the saddle, their contents never exceeding 20 pounds. Letters had to be written on tissue paper. At first the postage rate was \$5 for letters weighing less than one-half ounce, \$10 for those weighing from one-half to 1 ounce. Later the rate was reduced to \$1 per half ounce.

The fastest time which had ever been made from the Missouri River to the coast was 18 days. The schedule time of the pony express was 10 days. It is said that the pony express never failed to keep to its schedule except when its riders were killed by the Indians. It usually came in ahead of time. Lincoln's inaugural address was carried to the coast in less than eight days. The pony express is said to have lost but one mail. On one occasion, after the rider had been killed and scalped by the Indians, the gallant pony broke away from its captors and brought the mail in safety to the next station.

1. A recent advertisement by a railroad says that more gold is taken out of the ground in the form of Michigan crops than is taken out of the ground in California. Discuss this statement and at the same time discuss the general question whether all of the prospectors who went to California became rich on gold.

2. Why will men exert themselves to such an extent to reach gold fields if it is not quite certain that they are going to secure great wealth?

3. The rush to California has been compared with other efforts on the part of men to secure riches rapidly. What are some of the other kinds of schemes that have attracted many people without assuring them of certain returns?

4. In earlier days the risks in commerce were so great that only the more adventurous people took part in voyages. Find some stories of the dangers and the gains made in these early voyages.

RIDERS OF THE PONY EXPRESS.

The records of the pony express are filled with thrilling stories. One of these is about William F. Cody, later known as Buffalo Bill. Owing to the death of his father, Cody became the chief support of the family. When but 14 years old he was employed by the pony express. When scarcely 16 he made the longest pony express ride on record. After a trip of over 100 miles, he arrived at the relay station to discover that the rider whose duty it was to carry the mails the next lap had been killed the night before in a drunken brawl. Some one must carry the mail. Without a moment's hesitation Cody exchanged mustangs and was off on a hard, dangerous ride of almost 70 miles over a trail crossed by swollen streams. The necessity arising, he immediately made the return trip. In all, he covered a distance of 321 miles in about 21 hours "without stops, except to change horses and swallow one hasty meal—and the mail went through on time."

"Pony Bob" on one trip traveled a total of 308 miles. On this occasion he found that the Indians had burned three relay stations and killed their keepers. He brought the mail through only three hours late.

For such work the riders received from \$100 to \$150 a month and board. With the completion of the telegraph to the coast in 1861 the pony express was discontinued.

THE NEED OF A RAILROAD.

The tragic journeys of forty-niners across the plains and through the mountains, the difficulties of the great freight-carrying prairie schooners, the discomforts and dangers of travel in the picturesque stage coaches, the perils and heroism of the pony express riders, the growing needs of commerce, all brought home to the American people the need of a railway from sea to sea.

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LESSON C-28. THE FIRST RAILWAY ACROSS THE CONTINENT.¹

The gold seeker, bound for the California diggings in 1849, undertook a journey of at least four months through an unsettled and dangerous country. Nowadays a tourist who leaves Omaha for San Francisco passes through a region containing millions of prosperous inhabitants and arrives at his destination in two days without the necessary loss of a single meal or a wink of sleep. The slow-moving, creaking, lumbering prairie schooner has given way to a luxurious train.

EARLY STEPS TOWARD THE CONSTRUCTION OF A RAILROAD.

The first suggestion for a railway to the coast was made about 1835. By 1840 the plan had become popular and was repeatedly discussed in newspapers and magazines. Asa Whitney gave up his business and spent all his time urging its establishment. Thomas H. Benton, a famous Senator from Missouri, never grew tired of emphasizing the value of the oriental commerce which would enrich America when once a railway was extended to the Pacific. On one occasion he proposed that when the line was completed a huge statue of Columbus be hewn from one of the granite peaks of the Rockies, "pointing with outstretched arm to the western horizon and saying to the flying passengers, 'There is the East; there is India.' "

Realizing the political and military importance, as well as the economic value of a railway, the Government authorized extensive surveys. Frémont and others explored the mountains for years, seeking the most favorable routes. The annexation of Oregon and the southwest, followed by the gold discoveries in 1848, gave fresh impetus to the proposal. Petitions, memorials, and bills multiplied in Congress. During one year five different surveying parties were sent out. When it appeared that the best route lay in Mexico, the Gadsden purchase was arranged and the territory secured.

There was keen rivalry among various cities for the possession of the eastern terminus of the railway; Memphis, St. Louis, Chicago, and Milwaukee being the chief competitors. Northerners wanted a northern route; southerners wanted one through the

¹ This lesson was prepared by Howard C. Hill, instructor in history, University High School, University of Chicago. Public participation in the construction of great highways of commerce has not been uncommon. The difficulties in building the first transcontinental railroad and the necessity of large public subsidies in order to get the work done are described in this lesson.

South. Owing to the slavery question, such intense feeling was aroused between the North and the South that nothing was accomplished, though plans for a railway continued to be made year after year.

WORK BEGAN DURING THE WAR.

In the meantime the people of California hoped, prayed, and worked for a railway. At the outbreak of the Civil War they believed that their time had come, because the disagreements between the North and South which had stood in their way would no longer prevent the North from helping to build the line. Accordingly, in 1861, some leading men of California organized the Central Pacific Railway which was to be the California branch of the railroad. Their chief engineer hurried to Washington to present plans and urge action. In 1862 Congress after a long debate voted to incorporate the Union Pacific Railroad Co., which was to be the eastern company to connect with the California railroad.

The terms offered to the company were generous. The road was to have a right of way 400 feet wide across the continent. It was to receive 10 sections of land for each mile of track built, and the Government promised to advance large sums in Government bonds to help construction. President Lincoln, who had been keenly interested in the project for years, was authorized to select the eastern terminus. He chose Council Bluffs, Iowa.

The Central Pacific Co. promptly began work at the California end of the line, the first sod being turned on Washington's Birthday, 1863. Eastern business men were reluctant to put money into the enterprise, believing it would never pay a return on the investment. Not until 1864, when Congress doubled the land grant and offered certain other inducements, did capitalists put their money into it. Then the work began.

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1. How many transcontinental railroads are there at the present time in North America?
 2. Draw a map, tracing the routes of the main lines of these railroads. On this map indicate the chief obstructions that would be encountered by a person making the trip on foot or by stage coach.
 3. What is the time required at the present time to make the trip from one of the eastern points on these railroads to California. In order to get the answer to this question, procure some of the time-tables of the transcontinental roads.
 4. Trace some of the branch lines of the transcontinental railroads and explain how these branch lines are related to the agricultural development of the countries which they traverse.

DIFFICULTIES IN PROCURING MATERIAL.

At the western end of the line it was easy to get all the building materials needed except iron. On the mountains grew magnificent timber from which to fashion ties, trestles, bridges, and huts for the workmen. An abundance of stone was at hand for ballast and bridgeheads. But machinery and rails had to be brought thousands of miles over the sea. Labor, too, was scarce. Not much progress was made until Chinese coolies were imported by the thousand.

In some respects there were greater difficulties at the eastern end of the line. When work was begun in November, 1865, no railway line had been completed across Iowa. Hence, for two years building material, workmen, and equipment had to be brought up the Missouri River by steamer or across the Iowa plains by prairie schooner. No trees suitable for ties, bridges, and culverts grew in the neighborhood. No stone was available for roadbed. Water was scarce. Indian tribes were dangerous. These difficulties were made up for in part by the fact that it was easy to build a roadbed on the flat, smooth plain.

BUFFALO HERDS.

In those days immense herds of buffalo roamed the plains. Gen. Sheridan says that in 1868 he rode mile after mile for three days through a single herd. In 1869, a train was stopped eight hours by buffaloes crossing the track. Such a quantity of game helped greatly in supplying the railway employees with fresh meat. Unlike the Indian, the white hunter did not limit his killing to his need of food, clothing, and equipment. He rarely made use of the whole animal—meat, tendons, and hide. On the

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1. Show that an ordinary highway is important in developing the life of a community.
 2. Who pays for an ordinary highway?
 3. What is a survey, and what are some of the facts which a surveyor tries to find out when he is locating the route of a railroad?
 4. Find one of the histories that deals with the surveys of Fremont and others.
 5. What effect did these early surveys have on the history of the States other than through the building of the railroads?
 6. Why was it thought desirable to open a road to India?
 7. How much is a section of land? Why should the Government be especially generous in giving land to the railroad?
 8. In what other ways has the Government distributed the land in the Western States?

contrary, he usually used only the tongue and choice rumps, or wantonly slaughtered this splendid animal for its valuable hide or for mere sport. Because of this criminal wastefulness, an animal which less than 40 years ago numbered many millions is now found only in zoological gardens or on farms and ranches where it has been domesticated.

HOSTILITY OF INDIANS.

For years the Indian had watched restlessly the destruction of his game and the invasion of his territory by the whites. His hostility showed itself in raids on the migrators to Oregon and California. After 1861 prairie schooners, stage coaches, and pony express riders became more and more the objects of his enmity. On one occasion every station on the overland route for a distance of almost 200 miles was destroyed in a single night.

The Indian saw that he would have to give up his tribal life when the railroads were able to bring the white man across the plains and mountains. All his hate and fury were spent in a desperate effort to defeat or delay the project. He made the most extensive attacks the plains had ever known. Laborers were shot at their work; bridges were burned; track was destroyed.

Many of the employees of the railroad had served as soldiers during the Civil War and were usually capable of defending themselves. Like the minutemen of the Revolution, they were ready to drop spade or shovel at a moment's notice and pick up a rifle and fight. On one occasion, after the Indians had captured a freight train and its crew, the men formed in military order under the command of Gen. Dodge, the chief engineer, and in the face of a destructive fire from the Indians recaptured the train.

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1. Secure a description of the western prairies at the time that these were inhabited by buffaloes.
 2. Show why the western prairies have always been the great cattle regions of the United States.
 3. What are the chief regions at the present time devoted to the raising of cattle?
 4. What changes have taken place in the appearance of the western prairies as the result of the establishment of settlements?
 5. What devices were adopted by the United States Government to provide for the Indians?
 6. Find some of the stories of battles with the Indians.
 7. What were some of the chief Indian tribes that occupied the western plains?
 8. What are the names of some of the American soldiers who played the largest part in controlling the Indians on the western plains?

PROGRESS IN CONSTRUCTION.

In the midst of all these difficulties the construction of the railroad was slow. At the end of one year the Union Pacific, or eastern company, had laid but 40 miles of track. After five years' work the Central Pacific, or California company, had completed 136 miles.

In 1867 the greatest race on record began. Each company, eager to secure the bounty of from \$64,000 to \$96,000 per mile offered by Congress for construction in the mountainous sections, exerted itself to the utmost. In 1868 the Central Pacific built 363 miles of roadbed; the Union Pacific, 425 miles. At the beginning, construction had been considered rapid at 1 mile per day. It now rose to 10 miles. All world records were broken, and the next spring the road was complete.

RIVALRY FOR CONGRESSIONAL BONUS.

When the roads were about done, a curious difficulty arose. Owing to the failure of Congress to say where the roads should meet, and because there were large sums to be secured for each mile built, the rival companies showed no inclination to make their lines meet. As a result, their grading squads began to overlap one another. This disgraceful state of affairs led Congress to interfere. By a compromise, however, the rivals agreed to meet at Promontory Point, near Ogden, Utah. Meantime the Central Pacific had built 80 miles of grade east of the meeting point, while the Union Pacific had spent a million dollars on equally useless grading west of Ogden.

THE COMPLETION OF THE ROAD.

The completion of the road was made the occasion for a national celebration. On the 9th of May the Union Pacific force worked all night completing its last section. On the morning of the 10th

1. Find out how much the rails for a mile of railroad cost at the present time.
2. Find out what is the cost of ties and the other materials besides rails used in a mile of railroad.
3. What would be the chief item of expense in railroad construction in going through a mountainous region? If possible, get some figures which show the difference between the cost of railroad construction in different kinds of regions.
4. Find the distance from Omaha to California in miles and make some calculations which show the meaning of the rates of construction which are mentioned in the text.

there remained but 100 feet between the ends of the two lines. Six hundred people gathered to witness the concluding ceremony. In the little company were the leaders of the two railways, a delegation of Mormons from Salt Lake City, a squad of soldiers, a military band, and a motley crowd of Mexicans, Indians, negroes, half-breeds, Chinese coolies, and Irish laborers.

The two bands of workmen—Chinese at the west and Irish at the east—set the last ties and laid the last rails. The last tie was of polished California laurel. Nevada and Idaho each presented a spike of silver; from Arizona came a spike of gold, silver, and iron; from California, a spike of gold. A silver sledge hammer had been prepared for the occasion.

Telegraphic wires were attached to the rail in such a way that the blows of the sledge hammer could be reported instantly from sea to sea. The enthusiastic cheers which arose from the little company in the desert as the gold spike was driven in by the silver hammer were echoed from coast to coast. Says one writer:

Chicago made a procession 7 miles long; New York hung out bunting, fired a hundred guns, and held thanksgiving services in Trinity; Philadelphia rang the old Liberty Bell; Buffalo sang the Star Spangled Banner; and many towns burnt powder in honor of the consummation of a work which * * * gives us a road to the Indies, a means of making the United States a halfway house between the East and West, and last, but not least, a new guaranty of the perpetuity of the Union as it is.

With the exception of the Panama Canal, the Pacific Railway is the greatest engineering feat ever undertaken in America, perhaps in the world. Eighteen hundred miles of track were laid through an unsettled wilderness, much of which was infested with dangerous Indians. Mountains had to be tunneled, rivers and cayons bridged, alkali deserts and arid plains crossed. In money and

1. Make a list of the various things used in your community which are brought by a transcontinental railroad. If your home is at the western end of such a system of transportation, your list will include those things which come from the east. If you are at the eastern end, your list will be made up of things that come from the Pacific coast.

2. In the same way that you have made up a list of materials carried by the transcontinental railroad make lists showing how goods are brought and sent from nearer localities, indicating in each case the means of transportation by which these goods are carried.

3. Extend your lists to include trade routes that connect the United States with other countries and show in each case the length of the route which goods of the local market have traveled.

land the railway is estimated to have cost the Government \$830,000,000.

ROUTE OF THE ROAD.

In general, the railroad followed the old Oregon trail to the north branch of the Platte River, then went directly west to California. Originally a large part of this trail was marked out along waterways by buffalo and other wild animals. The Indian followed the buffalo; the trader followed the Indian; the settler and gold seeker followed the trader; and last of all came the railway—buffalo, Indian, trader, miner, surveyor, engineer, farmer. Such is the story of civilization in the far West.

Men seem to have thought that the value of the Pacific Railway would consist merely in reaching the coast or opening up oriental trade. But while the road accomplished both these purposes, its chief value lay in the fact that it opened up the interior of the continent to settlement.

EFFECTS OF THE CONSTRUCTION OF A TRANSPORTATION SYSTEM.

So long as men have no road by which to market bulky commodities, such as the products of a farm, remote localities are closed to settlement. Only the attraction of gold, silver, or valuable diamond fields can overcome this obstacle. Of what use to raise quantities of crops or cattle or sheep for wool if one can not sell the surplus? And how can one sell unless one can get to the market?

When a railway is built or a canal dug, the way to the market is open. Because railroads have been built, wheat and wool can be sold in London or New York; harvesting machinery and pianos can be purchased in Chicago or Paris. Through the building of

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1. When was the Territory of Wyoming admitted into the Union as a State?
 2. What is the difference between a Territory and a State?
 3. Find out about the history of some other Western State and show what were the influences that led to the development of that State to the point where it could be admitted into the Union.
 4. The railroads of the United States are for the most part constructed on what is known as a standard gauge. Why should there be uniformity in the construction of railroads?
 5. There has been a tendency in recent years for railroad companies to unite into systems of railroads. Can you see the advantages of this arrangement?
 6. Observe the cars on a freight train and note the different railroad systems to which these cars belong.

railroads land is occupied; ranches are established; farms are cultivated; cities come into existence.

OPENING UP THE NORTHWEST.

And so it was with the Pacific Railway. As the lines were built from the East and from the West, a wider and wider ribbon of settlement grew up along their borders. Near the two approaching ends there were always towns. These towns owed their existence to the presence of the railway employees. Like mushrooms, they grew up in a night; and for the most part disappeared almost as soon, advancing into the interior with the gradual extension of the line. Wild, rough places they were; frequented by railway hands, gamblers, cowboys, Indians, and desperadoes. A few such towns became permanent cities and developed into prosperous, orderly communities.

When the railway was finished, branch lines were soon built to outlying points. Ranches and settlements multiplied. At connecting points the need of transshipment brought larger towns into existence. In such manner developed cities like Cheyenne.

With the disappearance of the buffalo, cattle ranches made their appearance, extending their operations farther and farther as it became possible to ship cattle over the railway to eastern markets. Thus the far West was opened up.

The gigantic statue of Columbus, which Senator Benton wanted in the Rockies as a tribute to the completion of the first continental railway, has never been carved, but a far greater and more significant monument to the Union Pacific was the organization of the Territory of Wyoming in 1868. Wyoming had its origin in the mushroom towns of the Union Pacific construction days. These towns owed their development to the traffic the road made possible. The fruitful farms and thriving ranches in the State were peopled through the railroad, obtained their farm machinery and supplies by its means, and to-day depend upon its services for the marketing of their surplus produce.

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Chapter VIII

THE WORKER AND THE WAGE SYSTEM.

Even the most terrible calamities often result beneficially in ways which the wisest can not foresee. In April, 1906, the greater part of San Francisco, Cal., was destroyed by an earthquake and a devastating fire which followed it. To those who saw the miles and miles of desolate ruins immediately afterwards it seemed that the city could never recover from the disaster. Yet its indomitable citizens immediately set to work and a new city arose within 10 years which so far surpassed the old that the opinion has been freely expressed that the destruction of the old city, awful as it was in the loss of life and property, was nothing less than a blessing in disguise.

So it may be with the present war. With all its horrors and desolation it may bring results so beneficial to mankind that the lives of tens of thousands of brave men will not have been sacrificed in vain. Some of those results will probably be wholly different in kind from the purposes for which the war is waged. Already it appears that the working people throughout the world will derive benefits which would not have come to them in another generation of peace. Employers are giving more cordial recognition of their needs, public sentiment is more sympathetic in their behalf, and governments are actively taking steps as never before to improve their condition and to supervise the distribution of labor so as to prevent unemployment, one of the greatest troubles with which wage earners have to contend.

All this arose directly from the war. The armies of the warring nations have claimed the flower of the world's manhood. Vast quantities of munitions and supplies are demanded in excess of the usual need, and the men remaining to supply them are relatively few. The most careful consideration is required in order to reach the necessary production by the efforts of those few.

The improved status of the workers of the world will undoubtedly continue after the war is ended. It is not hard to understand that such benefits to large numbers of our fellow men may counterbalance much that is lost by the war, no matter what the other results may be.

The lessons of this chapter deal with some of the questions which concern workers. The corresponding chapters in series A and series B carry the discussion still further and they should be studied for a clearer understanding of the subject.

LESSON C-29. CHILD LABOR.

By Miss JULIA C. LATHROP, Chief of the Children's Bureau of the United States
Department of Labor.

Before steam was harnessed to do the work of many men and women; when yarn was spun at home and woven at home into the cloth that made the family's clothes; when most families had their own gardens and their own cow, and did not have to depend for their daily needs on people working many miles away of whom they knew nothing and cared less, life was very different from that which boys and girls are growing up now to face. No doubt even in the old days some children were overworked and prevented from growing into useful citizens, but such cases were rare. The child worked in the home with his parents, who were eager and able to do what was best for him.

THE COMING OF POWER-DRIVEN MACHINERY.

It was the coming of machinery and steam power which changed all this. Great factories were built, and towns and cities sprang up around the mines and factories. The task of tending a machine was usually so simple and required so little strength that women and children could be used for the purpose. They were taken away from their homes and their home surroundings, brought into factories, and set to work at the new machines. Machinery did not get tired. It did not demand food, or clothing, or time to sleep and play. It just worked, and the human beings who tended it in those early days had little chance to be more than machines themselves. The owners of the factory were eager to make profits, and the new force (power machinery) which had been brought into the world was so little understood that laws and other means of control could not be provided in time to prevent the factory owners from making bad use of the workers.

The heat, the dust, the noise, the glare, the dirt of the mills and factories were hard enough on the health of the men who worked there 12 hours, 14 hours, and even longer. The suffering of the women who often went to the mills when they had little children was appalling.

WHAT MACHINERY MEANT FOR MANY CHILDREN.

But the little children who worked could endure it least of all. They suffered hardships from day to day, for they worked so long they fell asleep at their machines. They lost their chance to grow

1. Give as many reasons as you can why a child working at home with his parents is likely to have better conditions than one working in a factory.

2. Is home work always good for a child? Have you ever heard of "sweated industries"? Are home surroundings always safer than those of a factory?

3. Get your teacher to show you from some industrial history or commercial geography book what the coming in of machinery meant in the development of English towns.

4. "The coming in of machinery made a great demand for the labor of women and children." Why?

5. "The coming in of machinery reduced home influences for great masses of people by from 10 to 13 hours a day." How?

6. Was it machinery which should be blamed for the bad conditions which followed the coming in of machinery, or was it the desire for gain? Or was it lack of knowledge of the new forces and how to handle them?

into straight, well-developed men and women. The machinery was molding them to meet its demands. It did not care that the boys and girls had no chance to learn about all the happenings in the world outside their workshops. It made no difference to the machine if these children could not fit themselves to take their places in the world as men and women able to do something better than their forefathers had done it.

THE MOVEMENT FOR REFORM.

It is hard for us who live under much pleasanter conditions to realize the hardships of the children workers of that day. Let us hear what a man living at that time said of the situation. Richard Oastler, who devoted himself to bringing about better working conditions, said in a speech at Huddersfield in 1831:

I will not picture fiction to you, but I will tell you what I have seen. Take a little female captive, 6 or 7 years old; she shall rise from her bed at 4 in the morning of a cold winter day, but before she rises she wakes perhaps half a dozen times, and says, "Father, is it time? Father, is it time?" And at last, when she gets up and puts her little bits of rags upon her weary limbs, weary yet with the last day's work, she leaves her parents in their bed, for their labor (if they have any) is not required so early. She trudges alone through rain and snow and mire and darkness to the mill, and there for 13, 14, 16, 17, or even 18 hours is she obliged to work with only 30 minutes' interval for meals and play. Homeward again at night she would go, when she was able, but many a time she hid herself in the wool in the mill, as she had not strength to go. And if she were one moment behind the appointed time; if the bell had ceased to ring when she arrived with trembling, shivering, weary limbs at the fac-

1. The lesson speaks of laws and other means of control. What are some of these other means? Is public opinion one? Why did not public opinion condemn the bad treatment of children in the early days of the factory system? It condemned this bad treatment later.

2. Machinery began to be introduced into England by about 1750. How does it happen that factory laws were not passed until 1802, 1818, 1831, etc.? What are factory laws?

3. "Machinery was molding the children to meet its demands." Just what does this mean?

4. Clearly, the factory system meant hardship for the children who worked in the factories. Did it mean any gains for children who did not work in the factories?

5. When it is said that "more product can be made with shorter hours of work," does it mean "more product per day" or "more product per hour"? Can you study better when you are not tired? Can you study better when the air is pure?

tory door, there stood a monster in human form, and as she passed he lashed her. This is no fiction. The girl I am speaking of died; but she dragged on that dreadful existence for several years.

Such cases were not rare. A committee of the English Parliament made an investigation. The results of that investigation showed that Oastler was describing facts as they were.

The factory system was so new that people had not learned that more product could be made with shorter hours of work and with better working conditions in general, and it was mainly on grounds of humanity that, in the acts of 1802, 1818, 1831, 1833, and in later acts coming down to our own time, England developed her great code of protective legislation for workers of all kinds and especially for her child workers.

THE FACTORY SYSTEM IN THE UNITED STATES.

The factory system did not spread to the United States until the first quarter of the nineteenth century. Even when it did come into our country, conditions were never so bad as they were in England in the early days of the factory system. We had such wide stretches of free land that workers could not be attracted away from the farms unless good terms were offered. As time went on, however, evils sprang up in our country also. Gradually, the various States made laws to deal with the situation. These laws were very different from State to State. Sometimes employers and parents alike were forbidden to let young children work. Other laws said that the child's place is in school and that he should have a chance to study and learn all that the past has to give him, at least until he is 12, 14, or 15.

1. There is a statement in Richard Oastler's speech which hints that the children of that day might have work while the parents could get no work. How could this be true?

2. Does it not seem hard-hearted to enforce a law that a child must go to school when the family needs very badly the money the child could earn at work? Is it really hard-hearted?

3. What is a minimum wage law? Look at the next lesson and see what social insurance is. If a State had such things, would many families need money so badly that they would try to send young children out to work?

4. Is it not very expensive to conduct the kind of rural schools mentioned in the lesson? Can it be less expensive than the old plan? Take a pencil and paper and make a list of items in which the new plan is more expensive than the old. Make a list in which the new plan is less expensive.

PROVISION FOR EDUCATION.

The mere fact that States have laws which say that children shall go to school and that young children shall not work does not always mean that the children are actually in school and not at work. Sometimes such a law says what should be done, but does not provide for the money and the officers who are to enforce the law. Unless it is enforced, a law is useless. It is worse than useless. It leads to a lack of respect for law. Sometimes a child-labor law says that children do not need to go to school if their families can not afford to buy them the necessary clothing. Unless the community sees to it that clothing is furnished such families, the children are not really protected. They are almost certain to leave school early, so that they can help their families by earning money.

Another case of an ineffective child labor law is one which says that children who live more than $2\frac{1}{2}$ miles from a school building need not attend school. Of course, these children are the very ones who need to go to school, since they live so far from other people. In some parts of the country a new method of reaching country children has been tried. A number of rural schools have been combined into one central school. This central school reaches out as far as 5 miles into the surrounding country and brings the children to school in motor busses or in wagons. In such centers, well-trained nurses look after the health of the children and discover slight troubles which, if not attended to, may mean serious defects later. The nurses help also in preventing the spread of contagious disease and in seeing that families give their sick children proper care.

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1. Under the Federal child labor law, may a child of 15 work in a mine or quarry? May a child of 15 work in a factory? What is a colliery?
 2. Draw up a list of reasons why the hours of labor for children between 14 and 16 should be limited to those stated in the Federal law.
 3. Do you know of any factory which ships its goods to other States? Do you know of any factory which does not ship its goods to other States?
 4. Have your teacher show you the "Interstate Commerce clause" of the Constitution of the United States. This clause is the basis of so much legislation that it is worth while to memorize it.
 5. Congress may regulate interstate and foreign commerce. Who may regulate State commerce? This is sometimes called "intrastate commerce."
 6. Find out what it means to have a "joker" in a law. Do you think there are any "jokers" in some of the State child labor laws?

POVERTY EXEMPTIONS.

Some child labor laws are ineffective because they let children work in case their work is needed for the support of the family. This provision would do little harm if it were carefully enforced, but sometimes the granting of these "poverty exemptions" is put in the hands of people who grant exemptions when they are not really necessary or wise. Often these persons mean well. They are sorry to see the family suffer. They do not realize that an "exemption" may cause the child to suffer all his life. The "poverty exemption clause" becomes thus a mere excuse for evading the spirit of the law. A community can not afford to harm its future citizens in this way. Children should not be deprived of the schooling which alone can give them a fair chance to become the kind of citizens we need.

THE CHILDREN'S BUREAU AND THE CHILD LABOR LAW.

It is clear that the various child labor laws of our States were not sufficient. They were too different, one from another; too carelessly drawn; too loosely administered. There was need of a single law which could be enforced over the whole country. In 1912 there was organized in our Federal Government a Children's Bureau, which is now a part of the United States Department of Labor. This bureau did a great deal of good work, and it was given a chance to do still better work when the so-called child labor law was passed.

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1. This lesson says, in many ways, that society can not afford to have its young children in factories. How does it happen that when child labor laws are proposed in a given State, many people object to them?
 2. Find out the steps which are taken to pass an act in Congress or in a State legislature.
 3. Are mines and factories the only places where young children should not work? Could there be objection to the use of child labor in agriculture? In selling papers? In blacking boots? In stores?
 4. Some people insist there is a great difference between "child labor" and "child wage labor." Explain.
 5. "The wage labor of children is one of the greatest evils in modern industrial life." This is a strong statement. Make a list of the evils of child wage labor.
 6. "Children are much more liable to accidents in factories than are adults." Why?
 7. "One of the greatest difficulties met in the enforcement of child labor laws is the tendency of parents to overstate the ages of their children." Why do some parents do this?

This law, passed in 1916, became effective September 1, 1917. Among other things, it says that the products of a mine or quarry may not be shipped to other States or to foreign countries if this mine or quarry employs children under 16 years of age. It also says that a mill, cannery, workshop, factory, or manufacturing establishment may not ship its products to any other State or to foreign countries if it employs children under 14 years of age; or if it lets children between 14 and 16 years of age work more than eight hours in any day, or more than six days in any week, or after the hour of 7 o'clock postmeridian, or before the hour of 6 o'clock antemeridian.

The child labor law is put in this form because under the Constitution of the United States Congress has the power to regulate interstate and foreign commerce. It thus has power to pass a law saying that the products of child labor shall not be shipped to other States or to foreign countries. Of course, such a law does not at once affect a firm which does no interstate or foreign business. Such a firm may continue to employ children, unless the State law forbids it. Most factories wish, however, to ship their goods to other States. Then, too, the national law is likely to be taken as a standard by the various States. If it is, every business will feel the effects.

THE PROPOSAL TO RELAX STANDARDS.

This law went into effect at the very time when many persons were saying that the standards of labor protection in the United States ought to be lowered so that war material could be made more rapidly by using child labor and by working longer hours.

1. "We shall all need to have intelligence and efficiency if we are to meet successfully the difficult problems which will face us after the war." What are some of these problems?

2. An English writer says that the British workman must increase his efficiency so that when peace comes he can produce enough for everybody to live well and still be able to restore the damage caused by the war. What does he mean?

3. How can a nation set about increasing the efficiency of its workers?

4. Are England and France increasing the protection for their children as a war measure, a peace measure, or both?

5. What are continuation schools? Are they a part of a sound child labor problem?

6. "If we could only suspend our labor laws for a year we could make so much war material that we would be sure to win." Why does the person who said this think that a suspension of labor laws would increase the amount of war material? Do you agree with him?

It is not surprising that people should think lower standards would mean larger output. It sounds very plausible, but it is not true. An undue number of hours a day, week after week, means that the worker never gets thoroughly rested and becomes slower and slower in his work. He becomes more and more likely to fall ill or to get injured. His output falls off.

BETTER STANDARDS IN ENGLAND AND FRANCE.

England, France, and Italy all came to the conclusion that as a war measure, they must restore their peace-time labor standards and even strengthen them. Even now, in the midst of war, bills for this purpose are being seriously discussed and will probably be passed. They say, among other things, that country schools and city schools must offer equal advantages to their pupils; that children who have had to go to work before they have completed a certain high grade in school must be allowed to go to school during working time for a stated number of hours every week; and they will do away with the exemptions which now permit some children to leave school before they have reached the usual age fixed by law.

These countries are strengthening their laws because they see how much depends on the kind of training they are able to give to the young people who are now growing up. The boys and girls who are in school to-day will have to bring to their adult life every bit of intelligence and every bit of efficiency they can possibly develop in order to help their country to meet the difficult problems which will face us all after the war.

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LESSON C-30. SOCIAL INSURANCE.¹

In the colonial times which you have read about in earlier lessons, it was not a very serious thing if a man or woman was not able to work for awhile. If one member of the family was hurt or ill, the others could still get enough to live on from the farm until he was well again. The old people who could no longer do a full day's work helped in many smaller ways, and it was no hardship for the family to share food and shelter. These conditions are even to-day true in country districts.

THE POSITION OF THE MODERN WORKER.

The case is very different with the modern industrial worker, who must live on the money he can earn by working for others. When for any reason he can not work, his wages almost always stop. But he must keep right on buying food from the butcher and the grocer, and his rent must be paid just the same. Very likely he must pay for extras, such as doctor's bills. How can he get along when he is unable to work? Some people say that each worker should save enough to take care of all such times. But many, if not most, working people earn barely enough to cover the cost of their ordinary living.

Of course we can imagine a great many different reasons why a man or woman might possibly be unable to work. The most important causes are four in number. They are accidents while at work, sickness, unemployment, and old age. Every year large numbers of wage earners are obliged to ask help from charity because of one or more of these four causes. Other families struggle along without asking for charity, but are obliged to sell part of their furniture, run into debt, or go without proper food. Perhaps some of the children have to leave school and find jobs, thus losing their chance for an education. Or the mother of the family has to neglect her housekeeping and her children and go out to work. The Government, in most industrial countries, has taken action to guard the worker's family against such hardships, by means of social insurance.

WORKMEN'S COMPENSATION.

The first form of social insurance to be put into force in the United States was workmen's compensation. This is the name

¹ This lesson was prepared by John B. Andrews, secretary of the American Association for Labor Legislation. For many reasons the position of the worker in modern society is insecure. Social insurance is one of the devices which have grown up to make his position more secure.

we give to the kind of social insurance which protects wage earners from loss due to accidents while at work. Since 1910 workmen's compensation laws have been put into force by 37 of the 48 States. One of the best laws covers the half million persons who work for the United States Government.

We are told that in the United States somebody is injured while at work every 15 seconds and somebody is killed every 15 minutes. We can not wonder at this when we realize how many dangers there are in modern industry. Think of the electrician who works among high-powered electric currents, often many feet above the ground. If he touches the wrong wire, he may be electrocuted. The miner, toiling far underground to get coal and metals for us, may be crushed by slate or caught in an explosion. There are dangerous machines in nearly every factory, and even on the farm more and more dangerous machinery is used.

A GOOD WORKMEN'S COMPENSATION LAW.

A good workmen's compensation law gives the wage earner medical care for his injury, and two-thirds of his wages as long as he is disabled, after the first few days. He is not paid the whole of his wages, because that might tempt some lazy men to pretend to be hurt and live without working. If the wage earner is killed, money is paid to his wife and children. The whole cost of workmen's compensation, since it is for accidents happening in the place of work, is paid by the employer, who is expected to add a little to the selling price of his goods to make it up.

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1. Do you know anyone in your community who has had to stop work because he had been injured in the factory? Did he get any money from his employer while he was sick? Did he get any from his trade-union? Did he get any from any other organization to which he belonged? Do you understand that benefits paid by a trade-union in such cases are to be called social insurance?
 2. If a worker is hurt in a factory, why not have him merely sue his employer? Would the worker be able to pay his lawyer's fees? Would he be likely to get as good a lawyer as the employer?
 3. Should the Government guard the worker's family against hardship by means of social insurance in order to increase production of goods or in order to have happy, contented citizens, or both?
 4. "Social insurance is fairer than saving because it puts part of the cost of not being able to work on the persons who are responsible instead of on the workers alone as saving does." Can not a worker avoid getting hurt in a factory? Can he not avoid being unemployed?

Workmen's compensation laws have had a second effect scarcely less important than the help they give the injured. We all know that "safety first" means that we must do all we can to be careful and avoid accidents. Some schools have had lessons about "safety first" on the street or at play. But the "safety first" movement started in campaigns to prevent accidents in factories and other work places and was the direct result of workmen's compensation laws. The fewer accidents in an industry the less an employer has to spend for workmen's compensation. So it pays him to do everything he can to make the work place safe.

"Safety first" was rapidly reducing the number of industrial accidents, but after the country entered the war they began to increase again. People have been so busy making war supplies that they have not taken time to be careful. Many men who have gone to war have been replaced by inexperienced workers who do not understand the dangers of their new work. This means that we must pay more attention than ever before to preventing accidents, for there must be no unnecessary loss of time on war work. "Safety first" is a patriotic duty.

HEALTH INSURANCE.

If you were to ask a wage earner if he had ever been unable to work on account of an industrial accident, you might perhaps find that he had never suffered from one. But if you asked him if he had ever been away from work on account of sickness, you

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1. Name as many occupations as you can which are very dangerous.
 2. Name as many occupations as you can in which there is very little danger.
 3. Find out what the United States Employees' Compensation Commission is and what it does. Find out whether it is doing anything in connection with work in war industries.
 4. Can you name any classes of employees of the United States Government who come under the Federal Workmen's Compensation Law?
 5. "The whole cost of workmen's compensation is paid by the employer, who is expected to add a little to the selling price of his goods." If it works this way, who really pays the cost of workmen's compensation in the long run?
 6. "It is only fair that society should pay the cost of workmen's compensation. Accidents result these days mainly because of the introduction of machine industry. Machine industry causes goods to be more plentiful and society thus gains. It is only fair then that society and not the worker should bear the risks." Do you believe that this is true? Do you see any reasons whatever why the worker should bear the risk under these circumstances?

would be almost sure to hear him say, "Yes; several times." Industrial accidents cause very serious loss to wage earners and their families, but sickness is a much worse problem. The charitable societies say that seven times as many people ask for help because of sickness as because of accidents. We are told that American workers lose an average of nine days a year from illness and that the total yearly wage loss is \$500,000,000.

THE STORY OF THOMAS HOWARD.

To see what a bad effect sickness now has on some wage earners' families, let us take the story of Thomas Howard, who was a machinist in a railroad shop, earning \$18 a week, and had a wife and five children. The oldest, Johnny, was a bright boy of 14, who was in his first year at Commercial High School, learning to be a bookkeeper. In the fall the two little girls got the measles, and the family had heavy bills for doctor and medicines. So when Mr. Howard caught a heavy cold in the badly heated shop where he worked, he did not feel that he could afford to see the doctor or to lose time from his work. Instead, he dosed himself with medicines from the corner drug store. Because he did not have proper care his cold improved but slowly, and he caught another one before he was well. In the spring he was left with a bad cough, and by fall his weakened body had fallen a prey to the dreaded tuberculosis germ. Finally he was obliged to give up work, and Johnny had to leave high school and take a position as messenger boy, where he had much less chance to get ahead

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1. The English system of health insurance arranges for workers to contribute one-third, employers one-third, and the Government one-third. Do you think these three parties are equally responsible for sickness?
 2. Is there not some sickness which can not properly be blamed on anyone? Is it right to have general health insurance cover such cases?
 3. Give as many instances as you can of cases where employers can by proper action lessen the amount of sickness among their workers.
 4. Give as many instances as you can of cases where the Government can by proper action lessen the amount of sickness among the workers.
 5. Give as many instances as you can of cases where the worker himself can by proper action lessen the amount of sickness he experiences.
 6. There are a great many life, accident, and health insurance companies. Is their work social insurance work?
 7. Why should not the worker be expected to insure himself against sickness in some private company? Is it right for the State to compete with private insurance companies by setting up a scheme of social insurance?

than as a bookkeeper. Mrs. Howard went out by the day sewing when she could get work, and while she was away the younger children ran wild. The misfortunes of this family could have been prevented if a law providing for social insurance against sickness, or health insurance, had been in effect.

HEALTH INSURANCE IN EUROPE AND AMERICA.

Most of the European countries provide their wage earners with health insurance, and some of those countries put health insurance into effect even before they did accident compensation. In England, for instance, nearly all the workers are covered by health insurance, for which they pay about a third of the cost, their employers a third, and the Government the rest. Then when they are sick their health insurance provides them with a doctor and medicines, and some money every week when they can not work. The worker is required to pay a part of the cost because much sickness is often caused by conditions outside of the place of work.

People in the United States who know how well the European laws work are now saying: "In this country, too, we need health insurance." Nine States have already ordered official investigations to find out about the need for health insurance and to plan laws.

A "health first" movement naturally follows health insurance just as "safety first" followed workmen's compensation laws,

1. Is there a workmen's compensation law in your State? If so, when was it passed? How do you account for the fact that we did not have workmen's compensation laws back in 1800?

2. If there is a workmen's compensation law in your State, what workers are covered and what benefits are provided?

3. Have industrial accidents increased since the beginning of the war entirely because people have become careless? Have new processes been brought into use? Are dangerous chemicals used more frequently?

4. Find out if your State is making an investigation of health insurance.

5. "Social insurance schemes not only relieve the worker, they tend also to prevent loss of work from occurring." Is this true of unemployment insurance? Of old-age pensions? Is there an old-age pension system for any city employees in your town?

6. Draw up a list of reasons why it is as much the duty of Government to care for its "soldiers of industry" as for its military soldiers.

7. Draw up a list of reasons why it is not as important for the Government to care for its "soldiers of industry" as for its military soldiers.

and for the same reason. If Mr. Howard's employer found that the chilliness of the machine shop was causing a great deal of sickness among the men and increasing the amount of money he had to pay for their health insurance, it would not be long before the shop was better heated. Under health insurance it pays to improve unhealthful working conditions, and a great deal of disease is prevented.

OLD-AGE PENSIONS.

At Christmas time each year one of the big New York City papers has some very sad stories in it. They are stories of old people who have worked hard all their lives but have not been able to save any money. When they are too old to work they must go to the poorhouse, unless charitable people give enough for them to live on.

Many old people have troubles of this kind. Nobody wants to employ them when they are no longer quick and strong. Old people sometimes have no children to take care of them, or very often their children are not able to do so.

To provide for such old people, most foreign countries have established old-age pensions or insurance. In England, for example, every man and woman over 70 years old who is of good character and has no property receives a weekly pension from the Government.

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1. Is the worker ever to blame for being unemployed? If he is, is it right that unemployment insurance should be applied to his case?
 2. Unemployment insurance should be adopted as a war measure to apply to the time of demobilization. Do you think the statement is a true one?
 3. Just what do you regard as the real purpose of unemployment insurance?
 4. Do you think that unemployment insurance would have an effect in bringing about an "employment first" movement similar to the "health first" and "safety first" movements?
 5. Draw up a list of reasons why the Government ought to establish social insurance for its soldiers and sailors. Could the matter not be handled by private insurance companies?
 6. Find out how much the monthly separation allowance would be for the wife of a private with one child when the soldier is in France. Find out how much it would be if there were four children.
 7. Find out whether any pensions are being paid to-day as a result of the Civil War. Are any being paid as a result of the Mexican War? As a result of the War of 1812?

In the United States, however, there is as yet no State system of old-age pensions for industrial workers. Many cities, however, give pensions to their school-teachers, policemen, firemen, and other city employees. Perhaps some day the Government will recognize the claim of its citizen "soldiers of industry" and make some provision for their old age.

UNEMPLOYMENT INSURANCE.

Unemployment insurance takes care of able-bodied men and women when they can not find a job. Even skilled and willing workers often suffer in this way. Many kinds of work are carried on for only part of the year. For instance, in the winter there is very little for carpenters to do. Every few years, also, a great many business plants shut down and we have "hard times."

The best social insurance against unemployment is found in England. There many workers, when they can not get a job, receive weekly benefits from a fund of which the workers pay three-eighths in small weekly payments, and the Government and their employers make up the rest. By means of unemployment insurance England is now making sure that the people who have served their country in war time may be kept from suffering if they can not find jobs for a while after peace is declared.

SOLDIERS AND SAILORS' INSURANCE.

Within one year after the war with Germany began nearly 2,000,000 men entered the Army and Navy of the United States. Millions more will take up arms if the war continues. Here is a

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1. What is the difference between private insurance and social insurance?
 2. What is the premium which is charged by private insurance companies for? Is there anything corresponding to this premium in social insurance schemes?
 3. Does private insurance, for example, fire insurance, prevent losses by fire, or does it merely distribute these losses throughout the community because so many people pay premiums? In answering this question remember the "safety first" movement.
 4. Name as many forms of private insurance as you can. Is there such a thing as burglar insurance, plate glass insurance, tornado insurance, hail insurance?
 5. Write out a definition of social insurance, and name as many kinds of social insurance as you can.
 6. "Social insurance is a device for making the position of the modern worker more secure." Explain this statement.

new reason why some men can no longer earn money to support their families. But it would not be fair for the families to suffer because their wage earners were fighting for their country. So Uncle Sam has worked out a splendid system of social insurance protection for these men and their families. It provides monthly payments for soldiers' families while the fathers are away at work, or if they are killed, and also for sick and wounded soldiers.

Each man is required to set aside half his pay every month for his wife. The Government adds to this according to the size of the soldier's family. The whole is called a "separation allowance." The Government gives \$15 a month to a wife, \$25 to wife and one child, \$32.50 to wife and two children, and \$5 more for each additional child.

Let us suppose that Henry McDonald is a private, with a wife and three children, who is fighting in France. His allotment for his wife would be half his monthly pay, or \$16.50. Every month the Government would send this and \$37.50 additional to his wife and three children, giving them a monthly income of \$54. If Mr. McDonald should die while in the service of his country, the Government would continue to pay a monthly allowance to his wife, and to the children until they were 18 years old.

If a soldier helped support his father and mother or his younger brothers and sisters before he went to war, he may also allot them part of his pay and the Government will give them somewhat smaller monthly allowances. Thousands of checks for these allowances are now going out from Washington to the families of soldiers in all parts of the country.

The soldiers' and sailors' insurance system is a great improvement over the old pension plan used after our Civil War. It relieves the men who are fighting for their country from worry about the needs of their families while they are away. It means that the families of soldiers will not be in need and that their homes will be kept together without their wives going out to work or receiving charity. This is the most liberal plan of social insurance protection ever provided by any Government for enlisted men.

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LESSON C-31. IMMIGRATION.¹

An officer in one of our Army camps was working with a certain "rookie" whose clumsiness exceeded belief. Trial after trial brought little result. "Hold on, you," finally yelled the officer, in disgust. "Hold on, you, till I learn English and I'll tell you what kind of soldier you are."

THE MIXED POPULATION OF THE UNITED STATES.

That an officer in the United States Army should be just learning to speak English seems at first glance merely amusing. It points, however, to one of the interesting features of our complex American life. It points to the fact that the people of the United States are of many races and from many countries. More than 39 different races are represented now in our population, each by a considerable group, and many of these foreigners have come to the United States in recent years. Of the entire group of young men in our country of ages from 20 to 39, the census of 1910 shows that over one-fourth were born in foreign countries. Even this statement does not do full justice to the situation. Almost another fifth of the group have parents who were born abroad. If one were to go back to the grandparents, perhaps another fifth would be found to belong to families which originally came from foreign countries.

Look at the census list of the different races now living in our country—Armenian, Bohemian, Croatian, Italian, Lithuanian, Polish, Slovak, and all the strange-sounding list. What a mass of questions come into our minds about these people. What are their home countries like, and why did they want to leave them? How did they live there, and what sort of people are they? Let us catch a glimpse of a few of them in their original homes and ways of living.

THE MORAVIAN PEASANT.

In Austria, near the southern boundary of Germany, lived Votja Stach with his family. He, like his neighbors, was a peasant, living by farming the land. He lived in a Moravian village where the strip system, which has come down from the Middle Ages, is still used; and each man holds, not many acres together, but a

¹ Material for this lesson was supplied by Miss Leona Powell, of the department of political economy of the University of Chicago, and William Jett Lauck, of Washington, D. C. Our population is made up of many diverse elements. The immigrant has contributed in many ways to our social and industrial life. We must, in the future, face more squarely the task of his Americanization.

number of long narrow strips of land. These strips are so narrow that sometimes Votja had to walk on his neighbor's strip to lead the plow horse on his own. He and his neighbors made their scanty living from the land and had little idea of buying and selling. Travelers in that region, who have offered peasant women liberal payment for their embroidered caps or some interesting bit of furniture have found that they will not sell—that money means little to them.

Votja and his neighbors were fond of dancing and had many outdoor dances, the boys dancing by themselves and the girls also by themselves. The boys were dressed for such gala occasions in long white linen tunics with bright woven girdles, wide white trousers, and hats with bright beadwork and peacock feathers. Votja's daughter, Bozena, could not marry until she had a dowry, a chest, and a complete outfit of clothes for the groom as well as herself. Bozena began to knit as soon as she could hold the needles. She had to make ready enough stockings to last herself and her future husband all their lives. Her parents would select a husband for her.

THE ITALIAN PEASANT.

In southern Italy live Carlino and Maria. They and their children work in the fields and vineyards. Carlino takes his produce to market on mule back, or on a cart drawn by white long-horned oxen. Maria must carry heavy jars of water on her head, wash the family clothes in the public washing place, pick olives and fruit, herd the goats, help tread the grapes in the wine press. Their land is practically all owned by a well-to-do man in the

1. Does the fact that we have in our Army soldiers who have come from the various countries now at war make it any harder for us to carry on the war?

2. Do other countries have the same ways of living that we do? Illustrate differences in manners, in work customs, in house customs, in marriage customs, in ways of training children, in religious customs, in education. Why do people in different countries live in such different ways?

3. How are immigrants different from natives of this country? If we had been born and brought up in their countries, would we be just like them? Is it necessary that they should continue to be different from the native Americans?

4. Is it easy to change beliefs and customs in which people have been brought up? Suppose an American were to go to live in a country where children were expected to help farm instead of to go to school, how soon would he be converted to this idea?

village near-by to whom Carlino and Maria give half their crops. A tenth of what they have left they give to the church.

THE TRIP TO AMERICA.

There are many reasons why these people leave their home countries and come to ours. Votja came because he was poor and had heard that America is a land where anyone can become wealthy. Jacob was persecuted because of his race, Sofia because of her political beliefs. Giuseppe and Camela have relatives who have already made the venture and are settled here and write home and send for them. Hans came from a country where, if he had stayed, he would have been compelled to serve a number of years in the army.

Before the war began the governments of their countries made little effort to keep these people from emigrating. Where passports were required, as in Russia, Austria, and Italy, either they could be easily secured or else, as in Russia, the officials could be evaded. Votja and his family secured their passports easily. Then they had to go to a town where there was an agent of a steamship company and secure their ticket. The agent sent them to the port from which their ship left, and there they were lodged until time to sail. They were given a medical examination so that they would not be sent back when they reached Ellis Island. Next came the trials of the voyage in the crowded steerage quarters, and then finally they were steaming past the Statue of Liberty in New York Harbor. There were other ports where incoming steamers landed, but the greatest number of immigrants came into New York.

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1. Has anyone from any country been free to come to the United States?
 2. When immigrants are not allowed to enter this country, what is done with them? Is there any method of seeing that they get back to their native villages? Why not? Have we any responsibility in the matter?
 3. How do our immigration authorities decide when incoming people are "likely to become public charges" and so are to be deported?
 4. Can an immigrant find out in advance whether or not he will be admitted when he reaches this country?
 5. What agencies have we for taking care of immigrants after they arrive in this country, seeing to it that they reach their destinations safely, get work to do, and homes to live in?
 6. What is the Immigrants' Protective League? What kind of work does it do?

ELLIS ISLAND.

Ellis Island is the place where immigrants must meet certain requirements before they are admitted into this country. Big ferryboats took Votja and his family and the thousand other immigrants who had come on that ship from the steamer to the landing place. In long lines, with bags and bundles in hand, they filed out, slowly, because they must pass by two sets of doctors. The doctors stood one on each side of the passageway. One took each newcomer, and, among other things, turned out his eyelids with a little instrument to see that he had no eye diseases; another doctor examined him for skin disease. All doubtful cases were set aside for more detailed examination. All who passed these tests were sent into the big hall, put with those who had been listed together on the ship's manifest, and finally each one was asked a great many questions. How much money he had with him; whether he had been arrested for crime in his own country; what relatives expected him here, and where they lived; whether he had been promised a job in America; what his beliefs were about anarchy and polygamy, etc.

SOME IMMIGRANTS ARE SENT BACK.

Votja answered all these questions satisfactorily and was then free to go on into New York and where he pleased. Many of his fellow immigrants were detained for a while at Ellis Island waiting for relatives to come and claim them; some had arrived ill and were sent to the Ellis Island hospital to be cared for; some who were unable to show that they would be taken care of by friends or

1. What are the principal countries from which the immigrants came to us, up to 1880? From what countries have most of them come since 1880?
2. From 1776 to 1830 a total of possibly 300,000 immigrants came to this country. In recent times they have come in as large numbers as 1,000,000 a year. Why this great increase?
3. Have there ever before been such movements of people from one country into others? When? What caused these movements? Were they as great as our recent immigration? Why not?
4. What agencies have we for teaching adult immigrants to speak English, to read and write, or other useful education?
5. What agencies have we for teaching immigrants the scientific knowledge about germs, methods of contagion, and the like, upon which our public health regulations are based? Do our own people understand these things?

would be able to make a living for themselves, or who had certain incurable skin or eye diseases, and after detailed examination by boards of special inquiry, had to go back to the old country.

It is a heavy calamity to these poor people to be refused admission into this country, and some pathetic separations occur when one child in a family, or an old father or mother, must be sent back. However, these cases are noticeable more for their pathos than for their frequency. In the 10 years 1901-1910, 8,800,000 immigrants came into our ports, and of these the total number deported was 108,200, or only about 1 in every 88.

WE HAVE ENCOURAGED IMMIGRATION.

Our Government has been very favorable in its attitude toward immigration. In the first place we were all immigrants. Some of us came a century or so sooner, but not one of us can claim to be a genuine "native" of this country except the American Indians, who were here when America was discovered and immigration really began. Then, too, in the times since the Government of the United States was set up as a separate and republican State, we have felt that it was not fitting for a "free" and democratic country to keep out anyone who had good motives for coming.

THE WORLD'S GREATEST MOVEMENT OF POPULATION.

And they have come. History tells us of many great movements of peoples from one country to another, such as the invasion of Italy by the Huns in 373 A. D., and of France and Italy by Attila in 451. The coming of the Huns has been described as it

1. Do the immigrants become a burden upon us? Why do so many workers object to their coming? Do they work at lower wages than native workers in the same industries?

2. Is it important for us that immigrants should know how to read and write? Why? What kind of people are most likely to emigrate? Are they similar in any characteristics to the "pioneers" who developed our country? How?

3. Why do so many of them come with the idea of making a little money and then going back to the old country? Do these always go back? Does this affect the kind of work they go into? The way they live? Their unwillingness to go into agricultural life?

4. Have we needed the workers who have come? Why?

5. How can immigrants who have just come to this country or have not learned to speak English know what wages they ought to get for their work? Can employment agencies easily cheat such people? How could this be stopped?

might have appeared to a watcher. "But then once more, after every break, came the horsemen, the hundreds and the thousands and the tens of thousands, slowly, ceaselessly, silently, drifting from the east to the west. The long day passed, but still the great broad stream was flowing by," That this was a great army that poured in upon the Roman empire we know, but it could not have been as great as the group of immigrants that came into the United States in a single year of the decade 1901-1910. Speaking of conditions at that time, it was said: "Through the gate to America drops the immigration stream; all day long every two or three seconds an immigrant with a valise or a bundle passes into a new world." And if we think of all that have come since the founding of our Republic it becomes the greatest population movement the world has ever seen, for, in all, over thirty millions of people have come from foreign countries to the United States.

In the early years of the Republic they came from the countries of northern and western Europe—England, Scotland, Ireland, Germany, and France. Toward the latter part of the nineteenth century the immigration began from central, southern, and eastern Europe, of Slavic, Levantine and Italian peoples. In the decade 1891-1900 this group came in greater numbers than the north and west groups, and by the next decade its numbers had increased until they were nearly four times the other group.

WHAT THE IMMIGRANTS DO.

This change in the source of our stream of immigrants means some very significant things. Farmers and farm laborers come in these new groups, and yet a great many do not go on farms in this country. Farming brings slow returns, and they are eager to

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1. Do the children of immigrants go into the same kind of work as their parents?
 2. Why is it easier for their children to become like native Americans than for those who come when older?
 3. Is it necessary or best for America that they should give up all their ways and ideas and adopt ours?
 4. Is it best for immigrants to live in groups of their own kind? Is this best for the United States? Why or why not?
 5. Can we expect to make all these racial elements into one unified people? What constitutes unity? Is it a matter of language, customs, beliefs, or simply of living in the same place?
 6. Why do immigrant communities have their own banks? Are these trustworthy banks? Are they subject to any State regulation or inspection? Should they be so regulated?

realize the dreams of making money which have been nourished by tales of their friends who preceded them over here and wrote home of their high wages and large savings. So these newcomers go into our coal mines, our steel mills, our railway construction work, our packing houses, wherever unskilled work is needed. "The patient willing labor of the Italians made possible the subways of New York; the Bronx sewer was dug by Italians, Austrians, and Russians." In lumber camps, in construction camps, the foreigner is found. In the clothing trade, however, the foreigner goes into skilled as well as unskilled tasks, and this industry is carried on almost entirely by foreigners—mainly Jews, Italians, and Lithuanians. There are also some skilled workers in other trades taken from among the immigrants. Altogether 56 foreign races are represented in our industry and a very large proportion of the industrial workers are of foreign birth.

THE PROBLEM OF AMERICANIZATION.

The mass of these are in unskilled work, and it is mainly these who constitute the "problem of Americanization." What is this problem? It is that of taking people who have grown up in other countries with other ways of belief, of manners, of morals, of making a living, and fitting them into our ways of believing, of treating our families and neighbors, of governing ourselves, of carrying on our industries? We have, for example, tried to see to it that their children attended our schools regularly whether or not education is a part of their own code. Where their customs are opposed to public health regulations, we try to enforce such regulations, if they are living in a community with other people.

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1. Ought our courts to take into account the fact that what seems to be criminal conduct on the part of the immigrant may be due only to his misunderstanding of our customs and laws?
 2. What is the attitude of labor unions toward immigrants? When they are skilled workers, do the unions admit them freely?
 3. What is the process of naturalization? Are the foreigners more easily controlled by our "ward bosses" than native Americans can be?
 4. Why has the war checked immigration to the United States so decidedly?
 5. Will the tide of immigration begin to come in again after the war? In as large numbers as before the war?
 6. Make as long a list as you can of the ways in which immigration has benefited this country. Make another list of the ways in which it has worked to the disadvantage of this country.

Why should anything more than these obvious things be done? Do we want them to give up all their customs? We formerly took no definite stand on the matter but simply allowed the immigrant to adjust himself to our life as best he could and with very little help of any kind. A belief is coming into existence, however, that we should attempt to make real citizens of these newcomers—citizens who, while keeping the best of their old ways and customs, have learned that common interests and ideals must exist to make a nation of us. Perhaps the stress of the present war will help us. We have among our immigrants many people who have come or whose parents have come from the countries now at war. What can give us any unity as a nation if not the common ideal of democracy for the world?

THE DECREASE OF IMMIGRATION.

So far the effect of the war has naturally been to decrease notably the number of immigrants coming into the United States. In several single years before the war more than a million came in one year. Last year there were less than 375,000. This was partly due also to the new immigration law passed by our Congress last year, February, 1917, providing that only those be admitted who are able to read in some language, with some exceptions; for example, those who have come because of religious or political oppression in their own countries. What the effect of this law will prove to be after the unusual war conditions are over, we can not easily foretell.

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LESSON C-32. HOUSING FOR WORKERS.¹

Many years ago, when men were wanted for the British Army, the Government accepted only large, strong soldiers, with broad shoulders and keen eyes. After a while it could not find enough fine, big men, and it had to enlist smaller youths with stooping shoulders. Then the Government asked why it was that Englishmen were no longer the fine, upstanding people that they used to be. It found that in the great city of London and in the manufacturing towns, such as Manchester, Birmingham, and Liverpool, and even in the Scottish cities of Glasgow and Edinburgh, there were terrible slums where sickly children were crowded in damp dark rooms; where fathers and mothers worked hard all day long and could not earn enough to pay for food for their families; where the people drank beer and ale and gin, instead of eating wholesome food. Even in the country, where one might expect to see the farm families rosy-cheeked and healthy, many of the workers were pale and thin from being crowded into one and two room huts with leaky roofs.

But the men of Parliament who asked these questions and who discovered that the English race was becoming weaker did not agree at first on the best way to make sure that the English people of the next century would be better than the English people of their day.

THE BIRMINGHAM HOUSING SCHEME.

It was the cities that first began to improve housing conditions. In the city of Birmingham there was a manufacturer who afterwards became a very famous man. One day it came to his attention that a workman had been away from the factory for several weeks. When the man came back he was pale and thin and not able to work all day. He explained that he had been very sick; that his wife and children were starving. The manufacturer asked his address and that very day went to the man's home, which he found to be a poor hovel in bad repair. Nearly all the furniture had been sold to pay for food.

The manufacturer had been in business almost 20 years, but he had never before known where any worker in his great factory lived. Upon inquiry, the employer was amazed to find that nearly all of the workers in his factory lived in the Birmingham slums.

¹ This lesson was prepared by Miss Harlean James, of the housing committee of the Council of National Defense. It shows something of the progress England and the United States are making in providing good living conditions for their people. Good housing is essential to the successful conduct of the war.

He went to the city council asking money to rebuild the broken-down houses. This the council at first refused to do, but after the manufacturer went to London and found bankers who were willing to spend money for homes for the people, the men of the city council said: "If this business of building houses is good enough for Joe Chamberlain, it is good enough for us."

And that was the beginning of the famous Birmingham housing scheme.

THE GARDEN CITY OF LETCHWORTH.

In England they have what are called "garden cities." Mr. Ebenezer Howard built the garden city of Letchworth, which now covers nearly 5,000 acres, or more than 7 square miles. There, not more than 12 houses may be built on an acre of land. On many acres there are only 9 people; whereas in many towns 200 or 300 are still allowed on an acre. The people who furnished the money for Letchworth may only earn 5 per cent interest on their investment. That means that those who live in the houses need only pay in proportion to the cost of their homes.

THE GARDEN SUBURB OF HAMPSTEAD.

Outside of London in 1907 the garden suburb of Hampstead was started. When Hampstead was being built, one day, in walking the streets of London, a gentleman came upon a painful scene. The furniture of a poor family was being put into the street because they could not pay the rent. He found that sickness and drunkenness were common occurrences in the families who lived in the ramshackle houses of this neighborhood. He persuaded 43 families to move into a group of houses in the new

1. When was the Industrial Revolution? Was there bad housing in England before that time?
2. Can you name any other causes than poor housing of the weakening of the English people?
3. Is medical science better to-day than it was 100 years ago? What is "preventive medicine?" Does improvement of medical science make for stronger people?
4. Locate Birmingham on the map. What kinds of goods are made there? Find whether other large cities lie near it.
5. Why are people apt to be pale and thin when they live in rooms without sunshine and fresh air?
6. What are slums? Have you ever seen the slums of a large city? Do smaller cities or even small towns have districts where the houses are poor?
7. Have you ever heard of bad housing conditions on the farms in this country?

garden suburb. The result was less sickness, little drunkenness, and no arrests for breaking the law. In London the death rate had been 67 in every 1,000. In 10 years at Hampstead the death rate in the same families was 7 per 1,000.

The gentleman proved to his own satisfaction that the very best people would find it hard to be good citizens if they lived in dirty, crowded rooms, and that the worst people find it easier to be good citizens if they live in comfortable, healthful homes. Manufacturers came to believe this, and they have built garden cities around their factories. The most famous of these are Port Sunlight and Bourneville.

ENGLISH HOUSES FOR WAR WORKERS.

By 1914, when the great war came to England, the cities, counties, and even the British Imperial Government had grown accustomed to loaning money to build houses for the people. The war caused great munition plants to be established, and, of course, the workers for these plants had to be provided with houses. The British Government has built several complete towns for this purpose, and has already spent, it is said, seven hundred million dollars in this way. Magic villages have been built at Gretna, Queensferry, Wellhall, Glengarnack, and East Riggs. At Wellhall, near the Woolwich Arsenal, in the space of nine months, 1,298 houses were built, together with streets, sewers, water and light systems, schools, churches, stores, and all of the conveniences of a modern town. At Letchworth the Government has built houses for 4,000 Belgian refugees, who are making ammunition for Belgian soldiers.

1. Is it not remarkable that the Birmingham employer had been in business 20 years before he learned where any of his workers lived? Do you suppose such a thing could be true of any manufacturer in this country?

2. What is a city council? Is there one in your city? If so, what does it do?

3. Find out some things Joseph Chamberlain has done other than those mentioned in this lesson.

4. Are there factories in your town? Where do the workers live?

5. Do you know how many people live in your block or in any city block that you have seen?

6. Do you know how many square feet there are in your block?

7. Can you figure how many people to the acre are housed in your block?

8. Make a list of the various ways in which the people of the next century could be made stronger than the people of this century.

It may easily be seen that one of the reasons why England has been able to take care of the war workers so well is because of her experience in caring for peace workers and in the building of garden cities.

HOUSING IN THE UNITED STATES.

In America we have never believed that the Government should do for its citizens anything they could do for themselves. We have been very proud of our individual enterprise, but cities in America grew very fast and in time our cities also had slums.

In 1870 a young Dane by the name of Jacob Riis came to this country, and he became much interested in providing playgrounds and breathing spaces for the children of New York. His book, called "How the Other Half Lives," has been read all over our broad land. Comfortably housed men and women who read the book went forth to study their home cities and found, to their surprise, that many of their fellow citizens were crowded into dark, dirty rooms in tumble-down houses.

In Indiana there is a woman who has spent 20 years of her life in an effort to improve the homes of the workers. She had little children of her own in school. They worked and played with the children from Shantytown. When this mother read "How the Other Half Lives" she began a work which has spread from Evansville through the State of Indiana and which has made her name known in every State of the Union. She is still fighting for better homes for the people. Already the children of Indiana owe her a great debt which we hope they will repay by becoming useful men and women.

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1. If a man receives \$75 a month salary, how much rent should he pay?
 2. Do you know the death rate of your town or county? Is it larger or smaller than the death rate of the families at Hampstead?
 3. About how many people do you think would live in 1,298 houses? How many people live in your house or apartment?
 4. A manufacturer once said: "Let the uplifters worry about housing for workers. I am not interested in it. I am interested only in those projects which will increase production in my plant." What do you think of this statement?
 5. Work out all the reasons you can for and against this statement: "The United States will have to spend more money for housing war workers than England."
 6. See if you can find out how many workers' houses could be built for \$700,000,000.
 7. How does it happen that there are so many Belgians in England?
 8. If you ever visit England, what war town and cities will you want to see?

COMPANY HOMES.

In 1881 the Pullman Palace Car Co. began to build "the city of brick." There was a handsome library, a school, and a hotel. The houses were rented to the men. In the strike of 1914 the men demanded higher wages and claimed that the company made profit from them by charging high rentals. So the State of Illinois passed a law which prohibited any company from owning the homes of its employees. Only since the war has this law been changed.

During the past few years many employers have built homes for their workers. Sometimes they have sold the houses, and sometimes they have rented them. In a few towns the manufacturers and other citizens have banded together and formed a company to build houses. These companies may make only 6 per cent profit. If more money comes in, it must be spent for something which will be for the good of all.

In the United States we have not built garden cities, as the English have done. Our cities have made progress, however. Most of them have passed laws which prevent bad buildings. Under the best of these laws, all rooms must have light and air and all houses must be provided with proper plumbing arrangements and with good fire protection.

HOUSING FOR WAR WORKERS IN THE UNITED STATES.

When the United States declared war in 1917, our Government had to place with our manufacturers very large war orders for ships and guns, aeroplanes and submarines, ammunition and equipment, uniforms and blankets, medical supplies and hospital outfits. Our manufacturing industries are located in certain districts; they are not evenly distributed over our country. Workers had to move from the places where they were not needed to the places where the war work was done.

1. What is meant by "individual initiative?" What is meant by "individualism?"

2. Why have Americans thought that it was unwise for the Government to build houses? Why have many people changed their minds?

3. What is the name of the "city of brick" referred to in the lesson?

4. What is a municipal building code? Is there such a thing in your town? If so, what are some of its provisions?

5. For what reasons do you think it would be a good thing for a company to own the houses of its employees? For what reasons do you think it would be a bad thing?

Into Bridgeport, Conn.; Philadelphia, Bethlehem, and Erie, Pa.; Wilmington, Del.; Norfolk, Newport News, and Portsmouth, Va., and into many other cities thousands of workers flocked to man the plants. New factories were built and new machinery set up; but buildings were not put up to shelter the people who worked in the factories. Two, three, and four families crowded into houses planned for one family. Four, five, and even six men occupied hall bedrooms, eight hours at a time. Some factories ran 24 hours, with three shifts of eight hours each.

INSUFFICIENT HOUSING DELAYED WAR WORK.

The workers who were crowded together in this way were so uncomfortable and so likely to fall sick that many of them went back to their old homes where wages were perhaps less, but where they could keep well and be able to do a day's work. Sometimes they tried other war towns before they went back home, hoping for better living conditions. This resulted in workers going from factory to factory partly in search of higher wages and partly seeking homes where they could keep well and strong. Sometimes a factory would hire 200 men in a week and not keep 10 of them. This constant change of labor is called the "labor turnover," and a factory which has to "break in" new men all the time finds that it can not make as many goods as it can when it is able to keep a stable labor supply.

This situation became so bad that at the request of the War and Navy Departments, the President has asked the Secretary of Labor to provide adequate housing for workers in war industries. A bill has been introduced into Congress which will provide \$60,000,000 for this purpose. This is in addition to another \$50,000,000 which Congress has already provided to build houses for workers in the shipyards.

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1. What is the National Housing Association?
 2. Why did so many workers crowd into a few cities in 1917? Why did not the citizens of these towns build the houses that were needed?
 3. Give all the reasons you can why a factory with a large labor turnover is not able to make as large a product as it should.
 4. Are there any war industries in your town? If so, do you think they have a large turnover? Do they have trouble finding good housing for their workers?
 5. What kinds of ships are built for war purposes? What is meant by saying that we hope to build 6,000,000 tons during 1918?
 6. Write a description of a shipyard. What are the "ways"? What are "riveters"?

SHIPS AND HOUSES.

All of us know that we need ships to win the war. One of the first war measures our Government took was to let contracts for great numbers of ships, some of which were to be built in our old shipyards and others in new shipyards made for this particular purpose. In some cases these shipyards are set up where almost no housing facilities exist.

In the shipyards there has been a big labor turnover. Last summer the men could live in tents and shacks, but when winter came they could not stand the cold and many of them left the shipyards. Those who remained could give a big day's work only when they were in good health. It became so clear that houses must be provided for these workers that the Shipping Board was told by Congress to spend \$50,000,000 for this purpose, and the houses are now being built rapidly.

PERMANENT AND TEMPORARY HOUSES.

It takes about six months to build permanent homes, and we can not wait six months for ships, submarines, aeroplanes, and other war supplies. The Government is, therefore, building temporary dormitories for single men, which will also take care of married men until the houses can be finished and their families brought to the place of work. The first dormitories which were built were open barracks, but they are now being built with a cozy little room for each man and a bathroom at the end of the hall.

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1. Find out what the American Institute of Architects is. Is this institute interested in housing for workers?
 2. Do you think that ships will be built in the United States after the war? Do you think the houses at all the shipyards will be needed for workers then?
 3. How many houses can be built for \$100,000,000? Do you think this is likely to be enough to meet our war needs?
 4. What is the Shipping Board? What does it do?
 5. Is it really necessary to provide libraries, playgrounds, and amusements in connection with the houses for war workers? Were amusements provided for our soldiers at the cantonments? Why or why not?
 6. "We must be careful to see that the right kind of houses are constructed for our war workers." List the qualities of the "right kind" of a house.
 7. What shipyard is nearest to you? Are they building ships for the war there? -If so, are they for the Navy or for the Shipping Board? Do the Navy and the Shipping Board build the same kind of ships?

Another way of helping find homes has been to put more cars on electric and steam railroads in order that men might come from a distance. In some cases even new tracks have been laid. But if men have to spend more than an hour a day going to and coming from their work, and if the cars are so crowded that they must hang on the running boards, they are often so tired that they can not work as hard or as fast as they could if they lived near the factory.

LABOR SUPPLY FOR WAR PRODUCTION.

We must have a good labor supply for our war industries. This means that we shall have to transport workers to places where they are needed, train them for the tasks they are to do, and provide them with living conditions which will keep them strong, well, and happy. The man who lives at home and eats the food cooked by his wife is usually in better health and can do more work than the man who lives in a rented room and eats in restaurants. And more than houses must be provided. In these new war towns there must be schools, churches, libraries, playgrounds, and amusements.

If the houses built for war workers are permanent houses, they will last long after the war. In some of them will live the men who will work in our industries in times of peace. Both because of this and because these war houses will be copied by many builders, we must be careful to see that the right kind of houses are constructed.

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